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ABSTRACT

Based on research conducted by the Center for the Study of Community Colleges between 1975 and 1980, this monograph presents 11 articles on the role of humanities and sciences at two-year colleges. In the first three articles, Miriam Beckwith compares data on humanities faculty in Washington State with nationwide information; Joseph Marks correlates institutional variables, such as enrollment and finance, with the humanities' deteriorating position at two-year colleges; and William Clark compares the degree attainment and teaching experience of literature instructors with other humanities instructors. The next three articles deal with science instruction. Curtis Cox compares general education natural science courses with courses designed for science majors. Darrell Clowes examines the two-year college science curriculum, its functions, and the courses designed to serve these functions. Thomas Doe discusses the instructional materials and practices used in mathematics courses. The final articles deal with liberal arts in general: Veloris Hallberg compares instructor goals and student evaluations among disciplines; Yukie Tokuyama reviews the instructional practices of humanities and social science faculty; Rose-Lise Obetz examines the use of instructional media in liberal arts; Kenneth Green focuses on faculty holding doctoral degrees; and Callie Bowles examines instructional differences in the sciences and humanities. (JP)

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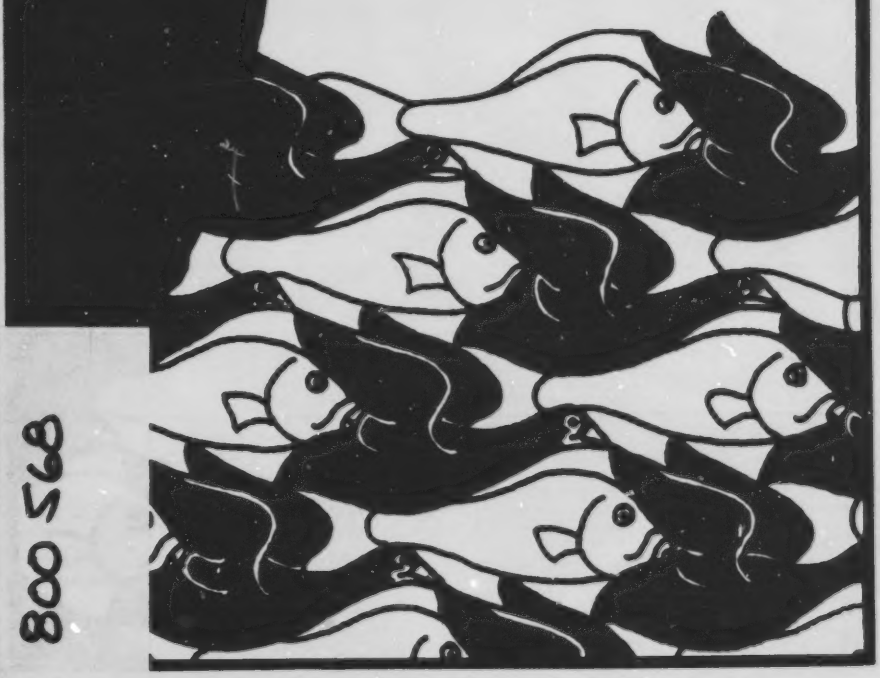

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Center for the Study of Community Colleges
and
ERIC Clearinghouse for Junior Colleges
University of California Los Angeles 90024

THE HUMANITIES AND SCIENCES IN TWO-YEAR COLLEGES

Summer, 1980

Center for the Study of Community Colleges

and

ERIC Clearinghouse for Junior Colleges
University of California
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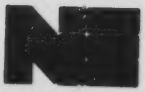

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PREFACE

Between 1975 and 1980 the Center for the Study of Community Colleges conducted several studies of the humanities and the sciences in two-year colleges nationwide. This series of studies was funded by grants from the National Endowment for the Humanities and the National Science Foundation. Data were collected on faculty, curriculum, instruction, and enrollments in two-year college courses in all the disciplines falling within the purview of both agencies.

Two sets of monographs were published. The first of these dealt with the humanities in two-year colleges. Issues in this "bird" series, so called from its cover, centered around the faculty, students, curricula; the disciplines, instruction and enrollment patterns; and institutional activities that either augment or diminish the humanities.

The second series covered the sciences in two-year colleges. Twelve monographs were published by the Center, dealing with curriculum, instructional practices, and the faculty in agriculture and natural resources, biology, chemistry, earth and space sciences, economics, engineering, environmental sciences, interdisciplinary social sciences, mathematics, physics, psychology, and sociology.

In its focus on both the **humanities** and the **sciences**, this monograph is directed to the liberal arts in two-year colleges. Over the years the role of these disciplines in this sector of higher education has been eroded. Three characteristics of today's college are helpful in explaining this erosion. The first of these characteristics concerns the expansion of missions and role for community/junior colleges. In addition to the transfer program, in which the liberal arts are traditionally housed, the college is called upon to provide programs for students interested in general education; students in occupational or vocational fields; students requiring remedial work to prepare to enter transfer or occupational programs; and non-degree students desiring cultural, recreational, or community-interest courses.

A second characteristic of today's communtiy college is the rather marked transformation in its student body. For example, the number of students enrolled in occupational programs increased from 13 percent in 1965 to 50 percent in 1976 (AACJC,1976); Lombardi (1978), in fact, notes that "it is not unusual to find colleges, even entire state systems, where

occupational enrollments exceed transfer enrollments" (p. 1). The number of students participating in non-credit courses or programs increased over 100 percent in one year (1.5 million in 1975 and 3.2 million in 1976). The fact that in 1976 as many students enrolled in non-credit as credit programs provides further evidence of these changes occurring in community college programming. Changes in the composition of the student population itself include increases in the number of part-time students, students over twenty-five years of age, women returning after extended absences, senior citizens, students from minority groups, and academically "underprepared" students (Knoell, 1973). Traditional full-time students entering the community college directly from high school now account for only 20 percent of the enrollments.

And the third distinctive feature addresses the nontraditional course-taking patterns of two-year college students. The curriculum of these institutions no longer reflects the classical, coherent, integrated, planned programs; students step in and step out, change majors, and begin programs without completing them (Cohen, 1978). Most are part-timers; in fact, recent data from California community colleges suggest that the modal number of classes taken is one (Hunter and Sheldon, 1978).

These three characteristics tend to very heavily affect the liberal arts in two-year colleges across the nation. Yet, interest in the disciplines typically included in the transfer/liberal arts area is still very much present in the minds of their faculty, some students and administrators, and two organizations that have been established to deal with these disciplines--the National Endowment for the Humanities and the National Science Foundation.

The articles in this monograph are further proof that these disciplines are not entirely forgotten. Each of the 11 chapters is based on data that were derived from projects conducted by the Center for the Study of Community Colleges: surveys of instructional practices employed by instructors of the humanities and the sciences, studies of curricular practices in both the humanities and the sciences, and searches of the pertinent literature. Information generated by the Center for the Study of Community Colleges has thus been exploited to serve the purposes of people in various institutions and to help redress the current imbalance of concentration away from the liberal arts. The articles have been grouped into three areas--the human-

ities, the sciences and social sciences, and, finally, the two areas combined. Each article stands on its own and is self-contained. To get both a broad and in-depth picture of the liberal arts in two-year colleges, however, it would be useful for the reader to examine each of the articles. They are arrayed as follows:

Miriam Beckwith, a staff member of the Center for the Study of Community Colleges, leads off with a comparison of the humanities on a national basis with the humanities in two-year colleges of a single state. She compares data derived from the national samples administered in 1975 and 1977 with information received from Washington state community colleges humanities instructors in 1979. Alternative curricular and instructional patterns, interdisciplinary courses, the role of the community in projecting the humanities, and disciplinary differences are all explored before a group of action-oriented recommendations are made.

The second article is written by Joseph Marks, who bases this discussion on his University of Arizona doctoral dissertation. Assessing the results of changed conditions in the humanities in the past decade, Marks integrates these findings with information about institutional variables (enrollment and finances) of the sample colleges and the types of efforts that will be needed to revitalize the humanities in the 1980s.

This piece is followed by a comparison of degrees, teaching experience, and goals of faculty teaching literature with their colleagues in other areas of the humanities. William Clark is a doctoral candidate in higher education at UCLA.

Moving now from these three chapters concerned exclusively with the humanities, we turn to three other articles that use as their database science information generated by the Center for the Study of Community Colleges. The first of these science chapters is written by Curtis Cox, a doctoral student at Virginia Polytechnic Institute and State University (VPI) and a science director at Southwest Virginia Community College. Cox compares natural science courses for general education students with those classes that are designed for science majors. He focuses on methods of instruction, course emphasis and tests and examinations.

Darrell Clowes, a professor of higher education at VPI, is concerned with the two-year science curriculum. He identifies the primary curricular functions of those institutions and the ways in which they are translated in-

to courses; analyzes instructors' perceptions of their courses; and examines curricular variations in terms of institutional size, geographic area, and regional setting--urban, rural, and suburban.

The final piece in this science trilogy is by Thomas Doe, a student at Colgate University, who compares remedial and regular mathematics courses by examining the literature and reviewing the data dealing with these course sections. Describing media used in these classes--reading materials, examinations and grading practices, class activities, and the faculty--he finds that remedial classes are showing signs of differentiated instructional patterns and are more innovative than the traditonal mathematics courses.

The last five articles in this monograph merge data from both the humanities and science projects, and thus direct themselves directly to the liberal arts in two-year colleges. Veloris Hallberg teaches English at Glendale Community College, and her article is based upon her UCLA doctoral dissertation. She addresses two questions: Are differences in goals, grading practices, or both, associated with academic disciplines? And, what is the relationship between instructor's goals for their students and the student performances that they evaluate? After presenting evidence to answer these questions, further questions are presented that faculty might address to improve their own instructional approaches.

Yuki Tokuyama, a graduate student at UCLA and a staff member at Bakersfield College, compares instructional practices of humanities faculty with those of their social science counterparts. Her research is directed to resolving questions about personal teaching styles: Are instructional variations due to personal or to disciplinary differences? To what extent are goals and objectives related to specific disciplinary course content?

The next chapter focuses on media and is written by Rose-Lise Obetz, a designer of educational multi-media training packages. This is a condensation of her UCLA dissertation, which utilized the science and humanities survey data together with individual interviews on a community college campus. Recommendations to augment the "media revolution" on community college campuses are included with her research results.

In this period of described faculty mobility, Kenneth C. Green, a UCLA graduate student in higher education, asks a pertinent question: Does the doctorate make a difference? He attempts to explain the relatively "cool" reception of community colleges to faculty holding the doctorate and examines

the perceptions of doctorate and non-doctorate instructors in terms of course goals and objectives, satisfaction with course materials, and examinations.

The last chapter in this monograph is by Callie Bowles, an adjunct faculty member at both VPI and Virginia Western Community College. Here selected teaching approaches of humanities and science instructors are compared in terms of disciplines, and the premise is tested that conceptual differences lead to differentiated teaching styles.

This, then, is our new Bird/Fish-Fowl monograph. By combining data derived from extensive studies of the humanities and the sciences it presents a contemporary look at the liberal arts in two-year colleges. While Center data were used for each of the 11 articles contained here, interpretations and opinions are those of the individual authors. The chapters were all revised and edited by Florence B. Brawer and reviewed by Arthur M. Cohen, principal investigator for each of the projects.

We are indebted to Stanley Turesky of the National Endowment for the Humanities and to Raymond Hannapel of the National Science Foundation, monitors on the projects from which the data were derived. We also appreciate the assistance of Carol Felixson and Donna Sillman of the Center for the Study of Community Colleges and of Bonnie Sanchez of the ERIC Clearinghouse for Junior Colleges.

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REFERENCES

American Association of Community and Junior Colleges. Fact Sheets on Two-Year Colleges. Washington, D.C.: American Association of Community and Junior Colleges, 1976. 18 pp.

Cohen, A.M. Instructional Practices in the Humanities, Fall 1977. Los Angeles: Center for the Study of Community Colleges, 1978. 18 pp. (ED 160 145).

Hunter, R., and Sheldon, M.S. Pierce College Longitudinal Study: First Year Report. Woodland Hills, Calif.: Pierce College, [1978]. 18 pp. (ED 161 482).

Knoell, D. (Ed.) Understanding Diverse Students, New Directions for Community Colleges No. 3. San Francisco: Jossey-Bass Inc., Pub., 1973.

Lombardi, J. Resurgence of Occupational Education. Topical Paper No. 65. Los Angeles: ERIC Clearinghouse for Junior Colleges, 1978. 36 pp. (ED 148 418).

HOW FACULTY VIEW THE HUMANITIES

Miriam M. Beckwith

Humanities courses have been offered in the community colleges since their earliest days. Because freshmen and sophomores at baccalaureate degree-granting colleges typically studied elements of the humanities, similar courses were offered in two-year colleges. Thus, literature, philosophy, cultural anthropology, history, foreign language, art, and music are offered as comparable first and second year courses in comprehensive community colleges.

However, recent enrollment figures in the humanities have been reduced considerably. According to data compiled by the Center for the Study of Community Colleges between 1975 and 1977, enrollments increased more than seven percent while enrollments in the humanities decreased by three percent. In some disciplines the decline was more dramatic than others. Literature was down by 13 percent, cultural anthropology by 10 percent, music appreciation by nine percent, history and philosophy by eight percent. The only disciplines to show an increase were political science (4%), interdisciplinary humanities (6%), and foreign languages (9%), where only Spanish and English as a Second

Language (considered to be a foreign language) showed increases.

Among the people who should be most concerned about the diminished importance of the humanities in two-year colleges are the faculty who teach them. In order to learn more about this group--who they are, how they view the humanities, how they teach their discipline, and what they have done to sustain and bolster their disciplines--the Center for the Study of Community Colleges surveyed a carefully selected nationwide sample of full- and part-time instructors in 1975 and 1977. In Fall 1979 another survey was distributed and retrieved from 80 percent of all the humanities faculty in Washington state's 27 two-year colleges. Thus, the findings discussed in this paper are based on both a macro- and microcosm of the humanities population.

Goals

Instructors in both the national and state samples clearly see the value of the humanities for their students. Their primary goal for students is to have them develop the ability to think critically; the three least important goals are to learn to use disciplinary tools for further research, develop citizenship, and learn to make better use of leisure time. This ranking of the highest and lowest values holds across most of the disciplines and among both full- and part-time instructors.

Faculty were also asked to rank other goals that they felt students could gain from the study of the humanities. They included: to develop aesthetic appreciation, develop their own values, gain abilities to study further in the field, gain respect for tradition and heritage, and understand self. The ranking of these goals varies with the nature of the discipline, and there are also some differences between full- and part-time instructors. For example, while music and art instructors feel that the development of aesthetic appreciation is very important for students in their classes, foreign language and literature instructors rank the development of language sensitivity and skill as a primary goal for their students. Or while instructors in anthropology and history emphasize the goal of learning to understand their own and other cultures, philosophy instructors focus on the development of values. Less obvious is why part-time instructors consider understanding their own and other cultures and gaining abilities to study further in the field more important aspects of studying the humanities than do their full-time counterparts.

However, what is clear from these findings is that faculty perceive the humanities as central to the purposes of higher education and as an inherent part of the overarching goals of general education. They do not see their disciplines as trivial, useful to only a small group who have the leisure to pursue them. Their difficulty seems to be in reconciling their feelings in the importance of these areas of study for all students with the fact that increasingly fewer students in their institutions are being exposed to the humanities in classroom settings.

A majority of the faculty recognize that the humanities are on the decline on the two-year college campus. In the four year interval between the national faculty study and the Washington survey, the number who believe that the humanities curriculum in their college should be modified has grown from half to two-thirds. At the same time, their view of how to present the humanities continues to focus on the traditional credit course. A number of their responses illustrate how few faculty-- ever in the face of falling enrollments and declining student interest--have been able to shift their thinking from the university parallel course to alternative curriculum and instruction channels.

Alternative Curricular and Instructional Patterns

While most faculty respondents acknowledge that teaching the humanities to students in occupational and remedial programs is different from teaching transfer students, most also agree that the same humanities courses should be given to all students. When faculty in Washington were queried as to the best way to bolster the humanities on their campus, "Requiring a humanities course for students in occupational programs" was ranked first. What this solution illustrates is how little contact the humanities faculty have with either the faculty or the students in the vocational/occupational areas. The heads of the various occupational programs will not impose such a requirement because the curriculum for their students is already highly scheduled. And even if they were to do so, many of the students would avoid the requirement by taking only the career-related courses and then going to work without receiving the particular degree or certificate.

A more viable alternative to requiring career and occupational students to take a humanities course is to bring the humanities into the occupational programs. Some humanities faculty have taken portions of their disciplines and adapted them to the specific needs of the students in the various occu-

pational programs. Usually such pieces or modules are presented not as a full-length course but as a two- or three-week segment inserted into the vocational program. To present such modules requires cooperation and joint planning between humanities and vocational faculty. It also requires adjusting administrative accounting procedures for funding formulas, faculty work load formulas, and the intra-mural fiscal allocations. But it can be accomplished. Spanish for police and fire protection students, French for culinary arts and restaurant management students, business ethics presented by the philosophy instructor to students in the varied business curricula, the role of the automobile in American society offered to auto mechanics students by history instructors, and the uses of grieving presented by an anthropology instructor for students in the nursing and allied health programs are examples of approaches that have been successfully implemented.

However, Center data reveal that such experimentation remains limited. When asked if they had presented their subject matter to students in an occupational course, only 20 percent replied affirmatively. Perhaps even more disturbing than not presenting their disciplines in other-than-traditional formats is the faculty members' inability to shift their way of thinking. According to the Washington sample's opinion, offering humanities modules in non-humanities courses is the least effective way of bolstering the humanities on their campus.

Interdisciplinary Courses

Interdisciplinary humanities courses, also called integrated humanities, came into the community college curriculum in the 1950s with the general education movement. But general education fell into disfavor in the 1960s, a victim of the vagaries of its own philosophy and the student protest movement. With its decline, interdisciplinary humanities courses also lost favor. However, the last few years have seen a return to or a rediscovery of general education as witnessed by the recent programs and proposals at Harvard, Berkeley, and Stanford. Some two-year colleges (Miami-Dade and Los Medanos) are also resurrecting general education programs and interdisciplinary courses are once again being advocated and implemented.

Interdisciplinary courses are viewed more favorably by faculty. In the national survey 80 percent of the respondents felt faculty should be involved in more interdisciplinary courses; in Washington, 91 percent of

the faculty agree that the interdisciplinary courses would provide a positive step toward enhancing the humanities. Such courses are also ranked as the second most effective means of bolstering the humanities. Interestingly, although our data show that part-timers are less frequently involved in teaching interdisciplinary courses, they view such courses as the primary means of bolstering the humanities.

The term interdisciplinary is used to cover a wide variety of course titles, subject matters, and instructional approaches. Most commonly elements of literature, art, music, history, philosophy, and sometimes science are combined in a single course and unified through a theme or problem. Such courses are sometimes taught by a single teacher and sometimes by a team of teachers working together to incorporate their disciplines. Cantor's (1978) discussion illustrates the diversity of subject matter presented under the rubric of interdisciplinary and underlines the following factors as common to interdisciplinary courses.

1. Many are aimed at occupational or career students. Since there is little room in mechanical technology or nursing students' programs for humanities courses, the integrated approach affords an opportunity to maximize exposure to the humanities in a shorter time interval. The same argument would hold for non-traditional students; those who work have little time, and senior citizens may lack patience for a traditional disciplinary approach to education.
2. Generally, all of the interdisciplinary courses are highly mediated, making use of films, television, filmstrips, cassettes, and other audio-visual devices both for presentation of classical and contemporary materials. In a country where the average high school student has watched 18,000 hours of television by the time he is 18, and where TV sets are tuned in approximately six hours during every day (Fader et al, 1976), can infer that some of the students are attracted to courses where the mode of learning seems natural and familiar.
3. Instructors who plan interdisciplinary syllabi and

> programs and participate in team-teaching efforts are usually high achievers, conscious of the fact that they are innovators, enthusiastic about their cause, and excited about changing the traditional system. This excitment often is communicated to the students who are tired of the traditional approaches to knowledge and are eager to participate in a more informal, experimental program (pp. 58-59).

Other writers emphasize the enormous amount of work, time, and energy required by instructors who teach in interdisciplinary courses or programs. Some reported data indicate that there is a good return on the time and efforts expended by instructors in these courses. The Center study of curriculum and enrollment shows that between 1975 and 1977 the number of students taking interdisciplinary courses increased. This increase, which is counter to the downward trend observed in most of the disciplines, may or may not contribute to the faculty's favorable view of these courses, but it certainly needs to be kept in mind when exploring options regarding the humanities.

In fact, such an option seems to be popular in practice as well as in theory among the faculty in Washington. Twenty-five percent state that they have planned and implemented an interdisciplinary course and forty percent of this humanities microcosm would like help in building such a course. Thus, the findings indicate that faculty both recognize the role that interdisciplinary courses can play in strengthening the humanities on their campuses and appear willing to experiment with this approach. Those involved with curricular structure need to take note of the faculty's receptivity to interdisciplinary courses and to enrollment data suggesting that students find such courses attractive.

The Community

The importance of the community is recognized by the faculty. Nearly all agree that their college should be actively engaged in community service and they also acknowledge what a critical asset the community is to the humanities program. Of the factors needed to strengthen the humanities on their campuses, faculty in Washington rank a community that is concerned with the humanities as number two in importance, second only to administrative support.

Nearly all of these same instructors agree that the college can enhance the community's participation in the humanities through such non-course related offerings and activities as lectures, museum trips, and exhibits, and 83 percent feel that community service activities in the humanities stimulate enrollment in humanities credit courses. Nationwide faculty feel that there are too few extracurricular and community service presentations related to the humanities. Perhaps to rectify this deficiency, close to half of the humanities instructors in Washington state have developed and presented an extracurricular offering in their discipline.

The findings from Washington reveal that faculty are community minded in that nearly all participate in one or more community organizations or groups. However, their involvement seems to fall short of extending themselves in less orthodox ways on behalf of the humanities. Besides advertising their courses in the community, few utilize other avenues of community/college interaction. For example, although in talking to instructors on various campuses the consensus is that counselors are not particularly helpful in recruiting students to the humanities, most instructors rely on college counselors to go into the high schools and explain their programs rather than going personally and advertising and recruiting. Or while 92 percent agree that better articulation between feeder high schools and their college would be beneficial to the humanities, it is the rare instructor who has taken the initiative to meet with high school teachers and work on articulating curriculum and instruction. Again, very few have met with community leaders to explore ways in which the college could enrich the cultural life of the area.

The Center investigations have shown that community support for the humanities, or the lack of support, cannot be predicted by the socio-economic status of the area nor is it directly related to some other community characteristic. Support seems to be based more on a serendipitous blend of the influence of college administrators and faculty members who are willing to expand their role beyond the classroom on behalf of the humanities. Faculty need to assume an innovative and vigorous posture in order to strengthen community interest in and support for the humanities.

Disciplinary Differences

The preceding discussion has focused on the humanities faculty as a

total group. However, the macro- and micro-perspectives reveal disciplinary differences as well as factors that may explain some of these differences, and these are important to note. Music history and appreciation instructors, for example, differ from the general humanities population in their vigorous efforts on behalf of their disciplines. They have the strongest feeling that counselors are not helpful in recruiting students to the humanities, but this feeling seems to be stirring them to take some action. They are the highest of all groups in going personally into the high school to advertise and recruit students, and a number of them have worked with the counselors to improve the advisement procedures vis-a-vis the humanities. They are also above the norm in having presented an extracurricular offering. This latter activity may be tied to the fact that a large percentage of the instructors teach both in the history/appreciation area and in the performing or studio aspect of the field. Concerts, solo performances, and recitals are popular extra-curricular offerings in many colleges.

Political science/jurisprudence instructors stand out because they are above the norm in meeting with community leaders to explore ways the college can enrich the cultural life of the area and in presenting their subject matter to occupational students. The latter may result from the inclusion of jurisprudence and elements of political science in a number of the law enforcement and administration of justice career programs.

On the other hand, the findings indicate that philosophy and foreign language instructors have been more reluctant than their counterparts in other disciplines to move outside the classroom and become involved with activities that have the potential of bolstering the humanities. Based on the results of the 1975 survey, philosophy instructors were described as not closely tied to other faculty in their institution, to their students, or to the institution itself. In short, they are seen perhaps not as disaffected but certainly as an aloof group (Brawer, 1978). The fact that a large percentage of philosophy instructors are considered to be part-time faculty may contribute to their lack of identification with either the institution or the people in it. This may account for their apparent unwillingness to do more than teach their assigned courses in the same academic university-oriented way that they had been taught. While opportunities exist for instructors in this discipline to adjust their course content and

teaching methods to other than a lower division format (some innovative faculty have done so), most instructors have not been able to move in new directions. The inner conflict in these instructors is most clearly seen in their strong disagreement with the statement, "Exciting events are taking place in the humanities" and the fact that they are below the norm in engaging in activities which might lead to some exciting changes.

Foreign languages, which also includes English as a Second Language, have the greatest percentage of part-time faculty--40 percent versus 24 percent for all disciplines in the nationwide project, and 63 percent versus 31 percent in the Washington study. Research on part-time faculty shows that they are less involved in institutional activities and in matters related to curriculum. The Center's surveys and the visits to college campuses confirm these findings on part-timers. Consequently, it is not surprising that the disciplines with larger numbers of part-timers--philosophy and especially foreign languages--are below the norm on activities that are intended to enhance the humanities but that require instructors to extend themselves beyond their classrooms.

Future Plans

The necessity for all faculty to assume a larger role in revitalizing the humanities is underscored by the findings on their future professional plans. Whereas four years ago a sizeable percentage of the faculty saw themselves moving within five years into other positions or institutions, that is no longer true. The number who now feel that there is a good chance that they might move to a faculty position at a four-year college, move to a faculty position at another two-year college, or take an administrative position in a community college has decreased greatly. Conversely, a larger number feel that five years hence they will be doing what they are currently doing. One can only speculate as to the reasons behind these shifts--greater awareness that the enormous growth spurt in higher education has ended and with it job mobility, or increased concern for job security and the benefits obtained from faculty unions--but the incontrovertible fact is that the faculty whose views have been reported here are the same faculty who will be teaching in the colleges in the years ahead. Therefore, what happens to the humanities in two-year colleges will in large part be determined by the actions and attitudes of this group.

Recommendations

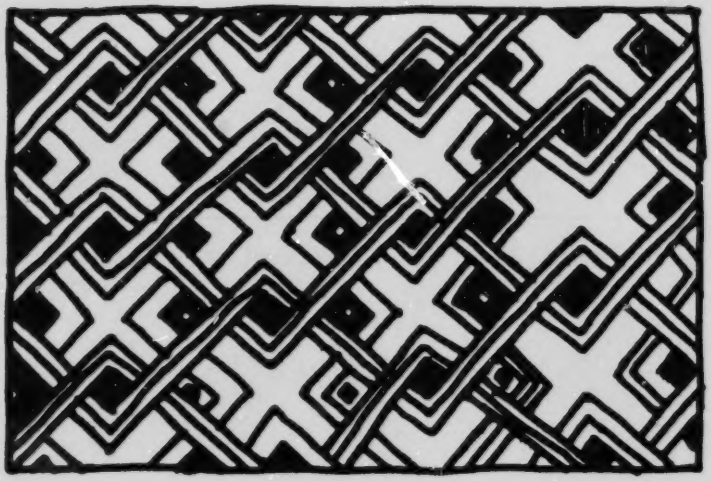
On the basis of the findings reported here, four action-oriented recommendations are offered. First, it is recommended that humanities faculty begin working with vocational faculty to design short modules or instructional units that can be inserted into specific occupational programs. Second, faculty from various disciplines develop and implement interdisciplinary courses. Both of these activities can be greatly facilitated through support and encouragement by college administrators. Specifically, administrators need to adjust funding formulas, faculty work load formulas, and departmental fiscal allocations to accommodate these instructional approaches. Third, humanities faculty need to be more involved in the Community Services Division and take advantage of the opportunities that exist for presenting humanities-related events. And fourth, it is recommended that humanities faculty actively recruit students to the humanities both by going to the high schools and by more vigorous selling of their disciplines among community leaders.

REFERENCES

Brawer, F.B. "Two-Year College Teachers of Philosophy." In F.B. Brawer (Ed.) The Humanities in Two-Year Colleges: Trends in Curriculum Los Angeles: Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, 1978. (ED 156 285)

Cantor, H. "Integrated Humanities." In F.B. Brawer (Ed.) The Humanities in Two-Year Colleges: Trends in Curriculum. Los Angeles: Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, 1978. (ED 156 285)

Fader, D.N. et al. The New Hooked on Books. New York: Berkeley Publishing Corporation Putnam Corp., 1977.



THE PERIL AND POTENTIAL OF THE 1980S*

Joseph L. Marks

During the latter half of the 1970s the alarm was sounded alerting the two-year college community to the deteriorating condition of the humanities. The Center for the Study of Community Colleges (CSCC) was the leadership agency, conducting the pioneering studies with National Endowment for the Humanities (NEH) support and being the foremost advocate for the humanities in two-year colleges (Cohen, 1976; Cohen and Brawer, 1977). Now that the 1970s have passed and the era of the 1980s has been entered, there is a need to reassess what has been learned, integrate what has been learned with other vital data regarding the condition of two-year colleges, and speculate, in an informed way, about the perils and potentials for the humanities in the 1980s.

*This paper is based on the dissertation, Forces Shaping the Humanities in Public Two-Year Colleges, by Joseph L. Marks, University of Arizona, Tucson, 1980.

CONCEPTUAL OVERVIEW

In order to reassess what has been learned about the changed condition of the humanities in the 1970s and integrate this knowledge with knowledge about changed institutional conditions, "steady state" concepts are useful. In the steady state period of the 1970s (a period of slowed growth) deviations from established growth trends brought about difficulties in two-year colleges. These difficulties in turn stimulated efforts to adapt institutions in ways that the deviations would be reduced (Leslie and Miller, 1974).

The pressures stimulating adaptations in community colleges during the 1970s affected different community college functions in different ways. For the most part, external social and economic forces impelled emphasis upon occupational and developmental functions. The general-liberal education functions closely identified with the aims of humanities education were of low priority. The pressures created a sort of "zero-sum game" in which the deck was stacked against the maintenance of the humanities. Yet the humanities are a well entrenched subsystem that itself adapts. As institutional adaptations evolved that threatened the humanities, forces within the humanities were generated to stimulate adaptations for their recovery and to insure their survival.

METHOD

The focus of this analysis is upon public two-year colleges. A sample of 142 institutions was derived by eliminating private two-year colleges from the list of institutions participating in studies conducted by the Center for the Study of Community Colleges. This sample is representative by region and age but somewhat underrepresented by small institutions. The Northeastern Region is underrepresented by five percent.* The Middle States Region is overrepresented by five percent. The Southern Region is underrepresented by two percent and the Midwestern Region is underrepresented by three percent. The Mountain Plains Region is overrepresented by two percent. The Western Region is overrepresented by three percent. The average sample institution is two years older than the average public two-year college. The average sample institution is 1,258 headcount students larger than the average public two-year college.

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*All percentages in text are rounded.

Definitions

Three concepts were selected for examination. To define the concept of institutional condition a set of measures of the financial and enrollment conditions of the sample institutions was constructed. The literature on the topic was reviewed (Breneman and Nelson, 1980; Dickmeyer and Hughes, 1979a, 1979b; Lupton et al., 1976; Minter, 1979; Minter and Conger, 1979; Patrick and Collier, 1977; Sanjabi, 1977). The approach taken was to define a basic set of financial and enrollment variables that reasonably could be expected to have an impact on educational program activities. Measurements were taken at two points in time (1971-72 and 1976-77) so that the degree and directions would be treated as independent variables. The variables considered here are as follows:

Institutional Condition Variables*

1. Percent change in institutional FTE enrollment, 1971-1972 to 1976-1977.
2. Percent change in institutional total current fund expenditures 1971-1972 to 1976-1977.
3. Percent change in the ratio, institutional instructional expenditures/institutional and general expenditures, 1971-1972 to 1976-1977.
4. Percent change in total institutional expenditures per FTE student 1971-1972 to 1976-1977.

To define the concept humanities condition a set of measures of the financial and enrollment condition of the humanities within the sample institutions was constructed. Measurements were taken (to the extent possible) at two points in time (1975-76 and 1977-78). This time period (at the end of the period for which institutional condition measures were taken) was chosen to treat humanities conditions as dependent variables. The variables considered here are as follows:

Humanities Condition Variables*

1. Change in humanities class enrollment as a percent of in-

*Sources for these variables are: American Association of Community and Junior Colleges. Community, Junior, and Technical College Directory, 1976 and 1978; Center for the Study of Community Colleges. 1977 Facilitator Survey computer tape; Center for the Study of Higher Education, University of Arizona, 1979 Humanities Survey; Halstead, D.K. Higher Education Prices and Price Indexes, 1975-1979; Higher Education General Information Survey. Financial Statistics comouter tapes, FY 1972 and FY 1979; National Center for Education Statistics. Fall Enrollment in Higher Education, 1971 and 1976.

stitutional headcount enrollment, 1975-1976 to 1977-1978.

2. Total humanities operating budget as a percent of total institutional instructional expenditures, 1978.
3. Change in humanites FTE faculty as a percent of institutional FTE faculty, 1975-1976 to 1977-1978.
4. Difference in the ratio of humanities full-time to part-time faculty 1975-1976 to 1977-1978 compared to the institutional ratios.
5. Difference in the ratio of humanities student to faculty 1975-1976 to 1977-1978 compared to the institutional ratios.

To define the concept of humanities responsiveness a measure of the degree of adaptiveness characteristic of the humanities within the sample institutions was constructed. The indicator was constructed following the categories of adaptations analyzed by Leslie and Miller (1974). The score for the indicator was derived by summing points assigned to measures describing adaptations in the various categories. The variables considered here are as follows:

Humanities Responsiveness Variables*

The Introduction of New Products

1. Introduction of new humanities courses or programs.
2. College sponsorship of conferences dealing with some aspect of humanities.
3. Extracurricular humanities.

The Introduction of New Production Methods

1. Increase in the proportion of part-time humanities faculty.
2. Faculty reported the desire for larger humanities classes or smaller classes.
3. Humanities faculty reported the desire for fewer prerequisites or stricter prerequisites.

The Opening of New Markets

1. Increase in humanities graduation requirements.
2. Special efforts to attract new groups of students to humanities courses.
3. Special humanities classes or units instituted for occupational students.

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*Sources for these variables are: Center for the Study of Community Colleges. 1977 Facilitator Survey and 1977 Instructor Survey computer tapes; Center for the Study of Higher Education, University of Arizona. 1979 Humanities Survey.

The Reorganization of the Enterprise

1. The reorganization of the humanities disciplines within the institutional structure.

ANALYSIS

Institutional Conditions

In the sample institutions over the five-year period studied institutional conditions changed substantially. The average institutional FTE enrollment almost tripled and total current funds expenditures over inflation almost doubled. At the same time, the proportion of educational and general budgets devoted to instruction decreased about eight percent and total expenditures per FTE student, adjusted for inflation, decreased about 30 percent. In sum, real per student expenditures declined in a major way even though expenditures increased overall. A question remains as to whether the total effect was a better or worsened condition for public two-year colleges.

Table 1

Descriptive Statistics for Institutional Condition Variables: 1971-1972 to 1976-1977 -- Change Values in Percentages

Variable	$\bar{X}$ 1976-1977	$\bar{X}$ Percent Change	S.D.	N
FTE Enrollment	3,302	189.8	442.0	134
Total Expenditures Over Inflation	$7,892,440	73.1	82.2	116
Instructional Expenditure Proportion	51.2%	- 7.5	12.1	116
Total Expenditures per Student Over Inflation	$2,415	-28.5	45.7	115

Three sets of interrelated factors seem to be involved, making a straightforward answer to the question difficult. On the one hand, many institutions probably realized economies of scale and reduced unit instructional costs. On the other hand, the savings may not have offset fully the increased tasks to be performed, that is, more students to be served. Furthermore, while expenditures did increase over inflation, inflation contributed to widening the gap between proportional enrollment and proportional income growth.

A reason one might negatively answer the question has to do with the nature and program demands of the new students. The enrollment growth of the 1970s was a growth in the enrollment of nontraditional students, who may be defined as being more than 24 years of age, minorities, female, part-time, or underprepared (Cohen, 1975; Davis, 1974; Leslie, 1977; Lombardi, 1975). Growing numbers of nontraditional students may very likely increase the overall cost burden for several reasons. First, nontraditional students do not tend to enroll in the ongoing, daytime program. Thus, costs cannot simply be absorbed as marginal costs by the programs already existing. Rather, nontraditional students are served primarily in additional courses or sections--i.e., they represent greater marginal expenditures. Second, part-time student enrollment gains may not be adequately matched by income because subsidies are on a FTE basis and conventional part-time to FTE conversion formulae often underestimate the resource requirements. Formulae for converting part-time to full-time equivalents rarely recognize the true costs of providing various supporting services. For example, new programs for minority and women's adjustment, multi-site operations to accommodate student preferences, day-care for children, administering the pool of part-time faculty and faculty development all incur new costs.

Given this probable increased cost burden and the impact of inflation, savings realized through economies of scale may not explain the size of the per FTE student total expenditure decrease adjusted for inflation. Thus it may be that the funding system for public two-year colleges did not provide sufficient income growth to meet the demands of enrollment growth during the inflationary 1970s. If this is so, financial strain resulted in public two-year colleges from the growth of the 1970s.

To further support this hypothesis about financial strain, it is helpful to review studies of the impact of growth upon institutional costs. The

studies focus primarily upon size and cost relationships in small, private four-year institutions (Leslie, 1972). However, such studies can be taken to be the best estimate of the general relationships.

Cost Studies

Overall, the cost studies show that efficiencies (lower unit costs) are gained through larger institutional size. However, when the size of an institution reaches a certain level, unit costs tend to increase. "The message is that institutions may have the potential for savings as enrollments increase but that they may not choose to capitalize in this manner. Instead, they seem to most often choose to harvest gains . . . [d]ollar savings are usually spent on new buildings . . . or as more often is the case, on an expanded curriculum" (Leslie, 1972, p. 15).

Moss and Gaither (1976) provide an explanation reinforcing the view that financial strain increased during the 1970s when they assert, "With the advent of steady-state conditions the greatest disadvantage of formulas is their linear approach to funding. As enrollments decline, formulas generate proportionately less funds" (p. 553). To a degree this observation applies to reductions in the rate of enrollment growth because reduced growth yields relatively less income growth. While variable costs may be reduced with reduced growth, fixed costs cannot.

Organizational complexity also has a bearing on costs. In a recent study, McLaughlin and Associates (1979) reported that "Simple agencies exhibit an economy of scale, whereas complex ones do not. Whether the division of labor or professionalization is taken as the indication of structural complexity, larger organizations tend to operate at lower cost than smaller ones if their structure is simple, but not if it is complex."

Curricular expansions, relatively diminishing formula funding as FTE enrollment growth declines whereas fixed costs do not, increases in organizational complexity through increased size and multi-site operations, increased support service costs, and the increasing proportion of part-time nontraditional students, may have reduced severely the potential for cost savings through growth in the 1970s. Thus, there is a considerable case for the proposition that public two-year college conditions worsened during the 1970s. If so, given the pressures to adapt in ways detrimental to the humanities, the hypothesis of deterioration in the humanities would seem to be a plausible one.

Humanities Conditions

As would be expected, humanities conditions also changed in important ways. The number of humanities registrants increased about five percent (Table 2). The number of FTE humanities faculty increased about 13 percent while the humanities FTE faculty proportion within the institutions remained essentially stable.

Table 2

Descriptive Statistics for Humanities Condition-Responsiveness Variables: 1975-1976 to 1977-1978 -- Change Values in Percentages

Variable	$\bar{X}$ 1977-1978	$\bar{X}$ Percent Change	S.D.	N
Class Enrollment Proportion	35.9%	- 3.3	8.4	141
Budget Proportion	14.0%	---[a]	10.9	94
FTE Faculty Proportion	16.8%	.6	6.1	88
FT/PT Faculty Ratio Comparison[b]	1:2.3	52.4	144.7	88
Student/Faculty Ratio Comparison[b]	3.9:1	- 5.7	36.8	87
Humanities Responsiveness	35.6	---[a]	19.0	93

[a]This is not a change variable.

[b]The mean value is the 1977-1978 humanities to institutional ratio.

Compared to institutional wide ratio changes the humanities full-time to part-time faculty ratio increased over 50 percent. This means that either institutions were using non-humanities part-time faculty at higher rates or the use of humanities part-time faculty was declining. Since the use of part-time faculty in the humanities is relatively low and general part-time faculty growth over the period studied was dramatic, the increase in this relative measure is probably due to increasing general non-humanities use of part-time faculty.

The student to faculty ratio comparison between the humanities and the institutions decreased about six percent. This result indicates that institutions were increasing non-humanities student to faculty ratios or decreasing humanities student to faculty ratios. Since humanities absolute enrollments increased while the proportion of humanities FTE faculty was stable, obviously the answer lies outside the humanities. In short, the size of institutional enrollment gains and the stability of the proportion of humanities FTE faculty make it probable that the major part of the decrease is due to increasing average class size in non-humanities courses.

What emerges from this humanities condition profile is the view that the humanities are surprisingly well off when looked at from the standpoint of traditional standards of quality, yet threatened when looked at from the standpoint of relative cost comparisons. Humanities enrollments continued to increase (though the enrollment share dipped) and FTE faculty were added (though the FTE proportion was stable). Compared to non-humanities programs the humanities have an increased proportion of full-time faculty relative to part-time faculty and relatively decreasing average class size. In other words, compared to changes in non-humanities conditions, the humanities had enrollment growth coupled with increased full-time faculty that would result in favorable (from the standpoint of traditional standards of quality) changes in full-time to part-time faculty and student to faculty ratios.

However, the picture is not entirely rosy because, from the increasingly important standpoint of relative cost comparisons, humanities enrollment share is decreasing while the FTE faculty proportion remains stable. In other words, the humanities continue to receive the same proportional level of support for FTE faculty while they serve proportionately fewer students. Relative to non-humanities trends the humanities full-time to part-time faculty ratio standing change is unfavorable in terms of cost because the relatively increasing proportion of full-time faculty in the humanities is more costly to support than the relatively decreasing proportion of full-time faculty outside the humanities. Finally, relative to non-humanities trends, the humanities student to faculty ratio standing change is unfavorable in terms of cost because the relatively decreasing average class size in the humanities is more costly to support than the relatively

increasing average class size outside the humanities. The conclusion is inescapable that, relative to non-humanities operations, humanities unit costs are increasing.

An explanation for the stability and qualitative enhancement on the part of the humanities in public two-year colleges in the face of increasingly unfavorable cost comparison trends may be found in the principle of the budgetary process that incrementally earned support shares tend to maintain themselves (Wildavsky, 1974). There are strong inertial forces that tend to maintain established support levels. Humanities courses are an integral part of most degree requirements, an institutional standard highly resistant to change.

However, the signs are worrisome. How long will Wildavsky's principle protect, so to speak, the humanities which have a declining enrollment share? How long will the humanities be protected when they are becoming relatively more expensive? The verisimilitude of Wildavsky's principle and the humanities stability so far are no basis for complacency. The humanities in public two-year colleges are threatened; some have already suffered. Efforts to rebuild the enrollment share base of the humanities are clearly needed. But in light of the need to rebuild the enrollment share base of the humanities in public two-year colleges, the humanities responsiveness findings are not encouraging.

The average humanities responsiveness score was just over one-third of the total possible. There are no norms for the responsiveness indicator nor is it known if the humanities now are more or less responsive than previously. It may be that the degree of humanities responsiveness is low. This [illegible] is understated, since the list of adaptations measured by the [illegible] admittedly limited. It may be the case, however, that the degree [illegible]nities responsiveness thus far is partially responsible for the stability of humanities conditions and the qualitative enhancement. In either case, clearly, there is room for increasing efforts to adapt the humanities in public two-year colleges to changing institutional conditions, which threaten the maintenance of the levels of institutional support earned by the humanities in previous decades.

A LOOK AT THE FUTURE

The 1980s will very likely be an era in which the institutional condition trends developed in the 1970s continue. This is to say that FTE en-

rollments will probably stabilize and may even decline. Total headcount enrollments will probably increase as the proportion of part-time non-traditional students continues to rise. Fiscal resources will probably continue to be strained by inflation, increased support service, and complexity costs while more and more people are being served in a widening variety of ways. (It is paradoxical that these developments will involve "management of decline" efforts.) Thus it is reasonable to expect the instructional expenditure proportion and expenditures per FTE student to continue to decline. Continued and heightened pressures acting to the detriment of the humanities will be the likely result.

Humanities conditions may very well destabilize. Real enrollment declines and continued erosion of the humanities enrollment share will probably emerge. As a result, student to faculty ratio comparisons will continue to be unfavorable for the humanities on the cost dimension, and the full-time to part-time faculty ratio will be carefully scrutinized. Chances are that attrition among the humanities full-time faculty will not be replaced by full-time positions and consequently the full-time staff base in the humanities will begin to erode. The strong inertial forces which seem to act to promote the stability of the humanities will continue to act but probably will not be adequate to hold back the detrimental forces.

The perils of the 1980s for the humanities in public two-year colleges are great. The potentials of the 1980s are bound up with the internal resources of the humanities. Needed will be major efforts to revitalize the humanities; to increase their responsiveness; to move the humanities into the growth potential occupational, developmental, and community services programs; and to evolve a new and forward-looking sense of mission. Such efforts will have to be taken in a largely unsupportive environment. Faculty development resources and other helping hands are not likely to be offered. Persistent, inner-directed, resourceful leadership and initiative will be required. In the event these efforts are undertaken, there is a fighting chance that the humanities can earn a lasting, central place in the public two-year college.

There are hopeful signs. The National Endowment for the Humanities is funding many short-term institutionally based humanities development activities. In addition, they are funding a three-year statewide revitalization effort in the state of Washington. A national Community College Humanities

Association has been formed with regional divisions to be a focus for faculty development and concerns. AACJC, which sponsored an assembly on the humanities in 1979, is considering the formation of a council on the humanities. At least one regional consortium to promote the humanities is in the planning stages.

The consciousness of people in the humanities in public two-year colleges is being raised. New agencies are being formed to offer helping hands. The degree of potential for the humanities in the 1980s depends upon the degree to which the hands of humanists are reached, mobilized, and applied to the formidable challenges ahead. Insight, initiative, imagination, deliberation, devotion, and dedication; these are the keys to the potentials of the humanities in public two-year colleges in the 1980s.

Joseph Duffey (1980), Chairman of the National Endowment for the Humanities, recently described the humanities as "nonquantitative inquiry into the continuities and discontinuities of human history; critical inquiry that aspires to the interpretation and understanding of human experience. . . the humanities can help to unmask the apparent 'givenness' of the cultural world around us. They can show us that our thoughts and acts have historical precedents, philosophical implications, imaginative possibilities" (p. 41). If humanists in public two-year colleges (and those concerned for the humanities in public two-year colleges) exercise a humanistic perspective as described by Duffey toward the condition of the humanities, and conjoin this perspective with the moral force of dedication, then the 1980s will realize potentials, not actualize perils.

REFERENCES

Breneman, D.W., and Nelson, S.C. "Reinvigorating the Humanities: Does Finance Have a Role?" Strengthening the Humanities in the Community Colleges. National Assembly Report. Yarrington, R. (Ed.) Washington, D.C.: American Association of Community and Junior Colleges, 1980. 18 pp. (ED 180 561).

Cohen, A.M. Adapting Institutional Research to Changing Student Populations. Paper presented at AERA/SIG, Boone, North Carolina, July 22, 1975. 15 pp. (ED 110 120).

Cohen, A.M. The Faculty and the Humanities: Two Endangered Species. Keynote address to Western Humanities Conference, Santa Cruz, California, August 18, 1976. 19 pp. (ED 126 980).

Cohen, A.M. Saving the Humanities. Speech given to the Michigan Community College Arts and Humanities Association Conference, Livonia, Michigan, November 18-19, 1977. 23 pp. (ED 146 975).

Cohen, A.M. Instructional Practices in the Humanities, Fall 1977. Los Angeles: Center forthe Study of Community Colleges, 1978. 18 pp. (ED 160 145).

Cohen, A.M., and Brawer, F.B. The Two-Year College Instructor Today. New York: Praeger Publishers, 1977.

Davis, J. The New Learners and the Community College. Seattle: Research and Planning Office, Washington State Board for Community College Education, 1974.

Dickmeyer, N., and Hughes, K.S. Preliminary Procedure for Evaluating the Financial Condition of Smaller Independent Institutions. Draft 4. Washington, D.C.: American Council on Education and National Association of College and University Business Officers, February, 1979a.

Dickmeyer, N. and Hughes, K.S. Comparative Financial Statistics for Community and Junior Colleges 1977-78. Washington, D.C.: National Association of College and University Business Officers, April, 1979b.

Duffey, J. "The Social Meaning of the Humanities." Change, February/March 1980, 12 (2): 39-42.

The Humanities in Two-Year Colleges. A Review of the Students. Los Angeles: Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, 1975. 64 pp. (ED 108 727).

The Humanities in Two-Year Colleges. Reviewing Curriculum and Instruction. Los Angeles: Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, 1975. 101 pp. (ED 110 119).

The Humanities in Two-Year Colleges. The Faculty in Review. Los Angeles: Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, 1975. 52 pp. (ED 111 469).

Leslie, L.L. The Issue of Institutional Size: A Case of Conflicting Views. New York: Committee for Economic Development Mimeograph, 1972.

Leslie, L.L. Higher Education Opportunity: A Decade of Progress. Research Report No. 3. Washington, D.C.: American Association for Higher Education, 1977. 84 pp. (ED 142 125)

Leslie, L.L., and Miller, H.F., Jr. Higher Education and the Steady State. ERIC/Higher Education Research Report No.4. Washington, D.C.: ERIC Clearinghouse on Higher Education, 1974. 65 pp. (ED 091 965).

Lombardi, J. Riding the Wave of New Enrollments. Topical Paper No. 50. Los Angeles: ERIC Clearinghouse for Junior Colleges, 1975.58 pp. (ED 107 326).

Lupton, A.H. et al. "The Financial State of Higher Education." Change, September 1976, 8 (8): 21-35.

McLaughlin, G.W. et al. Size and Efficiencies. Paper presented at the 19th Annual Forum of the Association for Institutional Research, San Diego, California, May 13-17, 1979.

Minter, W.J. "Current Economic Trends in American Higher Education." Change, February 1979, 11 (1): 19-25.

Minter, W.J., and Conger, C.A. "Comparing Institutional Reports of HEGIS Financial Data with AICPA/NACUBO Standards." Business Officer, March 1979.

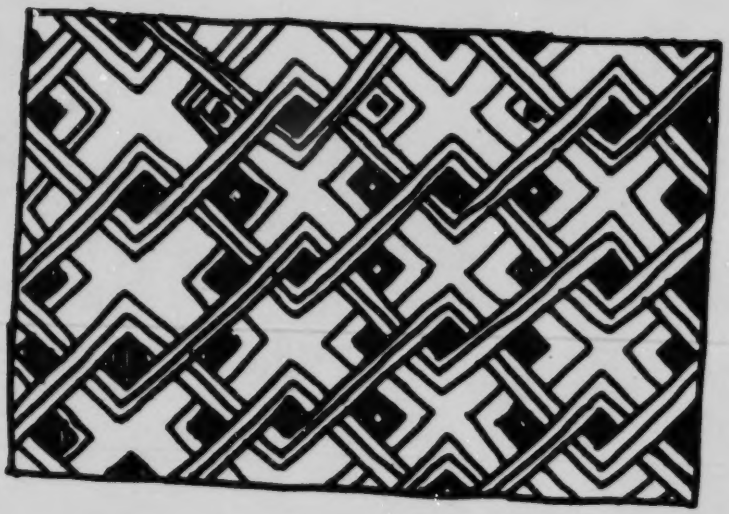
Moss, C.E., and Gaither, G.H. "Formula Budgeting: Requiem or Renaissance?" Journal of Higher Education, September/October 1976, 47 (5): 543-63.

Patrick, C., and Collier, D.J. "A Validity Check on the HEGIS Finance Data." in S.L. Coldren (Ed.) Measuring Financial Condition of Colleges and Universities 1978 Working Conference. Washington, D.C.: American Council on Education, 1978.

Sanjabi, S.R. Memorandum to Senior Accounting Officers Workshop Participants. Washington, D.C.: National Association of College and University Business Officers, March 15, 1977.

Wattenbarger, J.L., and Stepp, W.F. Financing Community Colleges, 1978. Gainsville, Florida: Florida University, Gainsville: Institute of Higher Education, 1979. 46 pp. (ED 175 518).

Wildavsky, A. The Politics of the Budgetary Process. Boston: Little, Brown and Company, 3rd Ed., 1979.



LITERATURE INSTRUCTORS

William L. Clark

How do the degrees held by two-year college literature instructors compare with those of their colleagues in other areas of the humanities? What about their teaching experience? Both the literature and data derived from the Center for the Study of Community Colleges' national survey of humanities instructors provide answers to these questions and present further insights into people teaching in two-year colleges.

DEGREES AND EXPERIENCE

Erickson's (1971) survey of English department faculty in California's two-year colleges reported that 87 percent of the instructors held Master's degrees, six percent held Baccalaureate degrees, and seven percent held Doctorates. These findings corroborate those reported by Bushnell (1973), who found 83 percent of the full-time junior college academic faculty with Master's degrees; seven percent, the doctorate; and two percent holding

either high school diplomas or associate degrees.

Also concerned with degrees held by two-year college instructors, Robertson (1967) compared the academic training of faculty members who were teaching general education courses in church-related versus public junior colleges in California. His findings indicated that a significantly higher proportion of instructors in the public institutions held the BA/BS degree (12% vs. 8%) or the MA/MS degree (80% vs. 48%) than their faculty equivalents at church-related colleges.

These later findings were not supported by the more recent data from the Center for the Study of Community Colleges' Instructor Survey. In this National Endowment for the Humanities supported study, it was found that 87 percent of all literature instructors held less than a doctoral degree while the remaining 13 percent held the doctorate. There is a higher proportion of doctoral degree holders in this sample of community college instructors of literature than in other surveys of community college instructors in general (Bushnell, 7%; Erickson, 7%; Weingarten and Kroeger, 10%).

Differences also pertain to the length of time that English instructors and their colleagues in other academic fields had taught in the same institution. For example, Brawer's (1976) profile of literature instructors in two-year colleges included the finding that 20 percent of the 1500 humanities instructors surveyed had taught for 11 to 20 years, while Bushnell (1973) reported that 43 percent of the liberal arts instructors at community colleges had been involved with academic teaching for 11 or more years.

What do these assorted findings portend for the teaching of literature in two-year colleges? Is the doctorate really necessary? The value of holding a doctoral degree for two-year college curriculum instructional purposes has been questioned. Indeed, Weingarten and Kroeger's (1965) survey of 300 two-year college English instructors regarding the value of the PhD in English indicated that seven percent felt it was very important, 40 percent saw it as fairly important, and 50 percent as unimportant. Opinions about the possession of a PhD or EdD degree in Education were even more skewed; very important, four percent; fairly important, 18 percent; and unimportant, 71 percent.

While literature instructors at community colleges have traditionally held the doctorate in higher proportions than instructors in other disciplines, there is a current trend among English departments not to hire "fresh" doctoral degree holders. This is partially due to the fact that depart-

ments would be obliged to pay a premium price on the wage scale for instruction that could otherwise be taught by a master's or baccalaureate degree holder. At the same time, for reasons of needed extra income, prestige, or tenure, established faculty members are completing doctoral degree requirements in greater numbers, thus moving themselves up the pay scale. These two factors have "double-teamed" to illustrate how literature instructors have proportionately upgraded their degrees in recent years. Of course, one might reasonably assume that this high proportion of doctoral recipients among community college faculty in English departments is true only for instructors of literature, and that instructors of composition and rhetoric may not hold doctoral degrees in such high numbers. Literature courses are generally considered to be the most desirable teaching assignments and would be awarded to instructors within the English department on several criteria, including level of degree held and experience.

GOALS, VALUES, AND OBJECTIVES

No generally accepted goals, values, and course objectives pertain to the study of literature within two-year community colleges. In fact, Jaeger (1974) points out that the prefaces and introduction to the two most widely used world literature anthologies do not mention specific objectives or philosophy for this branch of literary study. "Apparently, the editors assume that there is a body of value judgements to which world literature teachers generally subscribe. The community college catalogs, on the other hand, were a mine of information on course objectives and basic assumptions, all of which could be translated into value judgments" (Jaeger, p. 101).

Purves (1967) and Jaeger (1976) found the use of instructional objectives of any kind to be rare in the community college literature classroom. They would personally prefer to have instructors stress behavioral objectives such as imagination, power (to use language purposefully), and understanding (the ability to relate a piece of literature to one's own experience). Further, Purves (1967) stresses that the goals of literature are long-term and cannot be defined in terms of particularized skills. Rather, he would urge community college literature instructors to devise ways of encouraging their students "to form a permanent reading habit," and "to read literature with pleasure and understanding" (p. 2). Cohen (1975), in fact, points out that the majority of community college students are not transfer students and that instruction is now shifting away from attempts to imitate univer-

sity parallel courses in content and teaching methodology. And Shugrue (1970) urges instructors at all college levels to change their emphasis on professional elitism to professional accountability, and "to translate genuine affective introductory college work into behavioral statements" (p. 4).

Regarding course objectives, Eason (1978) and Harmen (1976) specify those objectives, goals, and behavioral statements that might well be included by an instructor in typical "Introduction to Literature" courses devised for community college students. Eason, for example, includes such goals as providing special remedial reading diagnostic tools, and, if needed, assistance by means of a reading specialist; encouraging writing; encouraging the intellectual process; encouraging the student to interrelate various pieces of information into a coherent pattern and to understand the different levels at which materials are often written; developing an appreciation of literature as an art; and clarifying one's theoretical approach to teaching.

MORE DATA ON LITERATURE INSTRUCTION

Cohen and Brawer's (1978) data on qualities that 106 community college literature instructors most desire and their students are tabulated below.

Table 1

Goals Held by Literature Instructors

Goals	N	Percentage
Group 1		
Develop citizenship qualities	7	6.6
Develop aesthetic appreciation	76	71.7
Develop language sensitivity	18	17.0
Learn to better use leisure time	1	.9
No answer	4	3.8
Group 2		
Understand our/others' culture	42	39.6
Develop own values	35	33.0
Gain abilities for further study	13	12.3
Gain respect for traditions/heritage	15	14.2
No answer	1	.9

Table 1 (continued)

Goals	N	Percentage
Group 3		
Learn research tools in humanities	0	0
Gain educationally useful mind qualities	27	25.5
Understand self	22	20.8
Develop critical thinking ability	55	51.9
No answer	2	1.8
	n = 106	100.0

These findings suggest that a heightened sense of aesthetic appreciation and sensitivity is the value in Group 1 that community college literature instructors most want their students to achieve. Correspondingly, the quality of "Understanding one's culture and other cultures" was significantly more prized as a quality than that of "Understanding oneself." It is also interesting to note that academic values are not strongly promoted by the two-year college literature instructors surveyed. Qualities useful in further education (e.g., the use of tools of research and the ability to study further in the field) received comparatively little support.

Grading and Evaluation

The quality of a student's coursework is commonly evaluated by a multitude of criteria: examinations, class discussions, class projects, and reports, to name a few. One would assume that community college literature instructors prefer to use an essay, not a multiple-choice or other objective test format for examinations. The rationale for the choice of an essay format, as Eason (1978) points out, is that students should be encouraged to write responses to readings, to interrelate various pieces of information into a coherent pattern--not to memorize isolated facts to be recalled at a later date. As Purves (1967) indicated, however, it is far easier for instructors of literature to evaluate content-recall and recognition skills than to evaluate how a student experiences a literary work. And recognition-recall questions, being easy to teach and still easier to test, still dominate much of the testing program in a literature course. Still, other means of evaluation are used in some community college literature courses. For ex-

ample, students enrolled in the Writing About Literature course at Hinds Junior College are required to complete eight 300-500-word themes and one 2,000-word term paper (Weingarten and Kroeger, 1965). Harmen (1976) requires a ten-page paper per term. And the Cohen and Brawer data indicated that essay examinations and outside papers comprise the most significant means of evaluation of students' work in two-year college literature courses (see Table 2).

Regular class attendance and participation in class discussions are also important means of evaluation. Instructor discussions with individual students account for a small portion of the grade, as do field reports. One might, however, note the reluctance of community college literature instructors to respond to certain items. For example, 42 percent of the instructors did not acknowledge whether the use of a workbook was included in the evaluation of the student's overall class performance, and if so, what proportion of the grade was dependent upon evaluation of the workbook. Quite possibly some instructors interpreted the choice of "not included in student's grade" to mean that a particular activity is used in class but not considered a part of the evaluation of the student. If so, these instructors might have wanted to convey the information that they do not use workbooks in class. Another possible explanation for the high "no response" rate is that instructors truly do not know, or have not established guidelines, for the proportion of a student's grade that each activity will represent.

The Cohen and Brawer data also suggest that instructors are generally consistent in their emphasis on student activities in class and the types of skills and abilities required of students on examinations and quizzes. Instructors stated that the ability to synthesize course content and understanding of the significance of certain works and events were considered to be much more important skills to be demonstrated on exams than mere recall and recognition. This finding parallels the previously discussed finding that essay exams are used more extensively than objective exams in literature classes. Purves (1976) would perhaps interpret the use of synthesizing skills as a higher cognitive-level skill than mere recall and recognition. Nonetheless, the recall of specific information and the mastery of a skill are abilities still considered by a majority of literature instructors to be somewhat important

Interestingly, literature instructors are concerned that students demonstrate, by means of exams, that they are able to relate curriculum material to their own values. In fact, 90 percent found this ability to be

Table 2

Emphasis Given to Student Activities by Community College Literature Instructors

Student Activities	Emphasis			
	Not Included in Student's Grade	Included--Counts Less than 25% Toward Grade	Included--Counts More than 25% Toward Grade	No Response
Papers Outside Class	6.6%	30.2%	58.5%	4.7%
Papers Inside Class	25.5%	29.2%	22.6%	22.7%
Objective Tests	26.4%	35.8%	13.2%	24.6%
Essay Exams	4.7%	22.6%	63.2%	9.5%
Field Reports	50.9%	9.4%	2.8%	36.9%
Oral Recitations	36.6%	29.2%	5.7%	25.5%
Workbooks	54.7%	2.8%	.9%	41.6%
Class Attendance	33.0%	46.2%	5.7%	15.1%
Class Discussion	19.8%	53.8%	19.8%	6.6%
Instructor Discussion	59.4%	17.9%	1.9%	20.8%
Other	--	5.7%	4.7%	89.6%

SOURCE: Cohen and Brawer, 1978.

Table 3

Student Competencies Emphasized by Literature Instructors by Means of Examination

Student Competencies	Importance		
	Very Important	Somewhat Important	Not Important/ No Response
Mastery of a skill	34.0%	48.1%	17.9%
Acquaintance with concepts	67.9%	25.5%	6.6%
Recall of information	28.3%	58.5%	13.2%
Understanding material	75.5%	19.8%	4.7%
Ability to synthesize content	71.7%	20.8%	7.6%
Relate material to one's values	50.0%	39.6%	10.4%

SOURCE: Cohen and Brawer, 1978.

at least somewhat important.

Use of Other Resources

Community college literature instructors may have used an all-lecture instructional format exclusively in years past--but no more. The trend seems to be toward using guest speakers, movies, presentations, and off-campus experiences, all as part of the course. For example, students in literature classes at Chabot College (California) have the opportunity to listen to guests recite their own poetry and drama. Students are further encouraged to write their own materials and to recite their own scripts to off-campus audiences (Mertes, 1972).

Forest Park Community College (St. Louis) has developed a literature course wherein students read short novels, show appropriate slides, and synchronize the slides with a soundtrack of selected student excerpts from the novel. The premise is that students benefit more by hearing and taking part in literature than by analyzing it (Friedrich and McPherson, 1974).

Films, reading labs, and writing labs are also used as a part of community college literature courses. But Eason (1978) cautions that films be used as a stimulus to marginal readers and not merely as entertainment.

The Cohen/Brawer sample indicated that nearly three-fourths of their literature instructors surveyed do use media, but these instructors estimate

that the use of media involves, on the average, slightly more than 10 percent of actual class time. Approximately 73 percent of the instructors frequently or occasionally use films. Guest lecturers are not popular resources, only one-fourth of the instructors acknowledging their use.

Class discussions are conducted extensively; in fact, almost all of the instructors hold class discussions. Over one-third of the instructors estimate that they hold class discussions during at least 40 percent of the actual class time. Clearly, most community college literature instructors are not conducting their classes in a straight lecture format. In addition, 52 percent use individual student verbal presentations as part of the curriculum (Cohen and Brawer, 1978).

SUMMARY

The recent survey of instructional practices in the humanities has indicated that community college instructors of literature can be characterized along various dimensions: faculty degrees and teaching experience, goals and values, types of in-class resources used, and grading and evaluation practices.

Approximately 13 percent of the literature instructors reported holding doctoral degrees. Although 10 percent had taught in a community college for less than three years, 31 percent taught for eleven years or more, and 60 percent taught for a period of between three and 10 years.

Literature instructors want to encourage a heightened sense of aestheticism within their classrooms. They prize the development of students' own values above students' gain of abilities for further study in English. However, the ability to think critically is a value more prized than the ability of students to understand themselves or the ability to gain educationally useful mind qualities.

Essay examinations and outside papers comprise the most popular means of evaluation of students' work in community college literature classes. Class discussion is held by 98 percent of the instructors during actual class time. Most instructors who do so restrict class discussion to less than 30 percent of actual class time. Media (primarily movies) are used by 75 percent of the instructors, but during very little actual class time. Student reports, guest lecturers, and examinations comprise the additional aspects of actual class time. Field trips and simulation exercises are not used extensively.

Instructors stated that the ability to synthesize course content and the understanding of the significance of certain works and events were considered to be much more important skills to be demonstrated on exams than mere recall and recognition. This finding parallels the finding that essay exams are used more extensively than objective exams in literature classes.

Most of the literature and research about the methodology and teaching practices of community college literature instructors is of a highly localized, descriptive nature. Typically, an instructor will author an article in which a particular course syllabus at a single community college is outlined. Heavy emphasis is usually given to original use of media, laboratories, or any other particular innovation currently in vogue, which is used in association with the syllabus. But in all, literature instructors tend to structure their courses and their own professional activities in much the same way courses have been traditionally structured.

REFERENCES

Brawer, F.B. A Profile of Literature Instructors in Two-Year Colleges. Los Angeles: Center for the Study of Community Colleges, 1976. 6 pp. (ED 126 978).

Bushnell, D.S. Organizing for Change: New Priorities for Community Colleges. New York: McGraw-Hill Book Company, 1973.

Cohen, A.M. (Ed.) The Humanities in Two-Year Colleges: Reviewing Curriculum and Instruction. Los Angeles: Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, 1975. 101 pp. (ED 110 119).

Cohen, A.M., and Brawer, F.B. "Literature Instructors," The Humanities in Two-Year Colleges: Trends in Curriculum. Los Angeles: Center for the Study of Community Colleges, 1978. 9 pp. (ED 156 285).

Eason, D.O. "Teaching Literature in the Two-Year College." Teaching English in the Two-Year College. Spring 1978, 4 (3): 226-30.

Erickson, A.B. English Programs in Selected Two-Year Community Colleges, Private Liberal Arts Colleges, and State Colleges in California. Doctoral dissertation, University of Southern California, 1971.

Friedrich, R., and McPherson, E. "English at Forest Park Community College." College English, May 1974, 35 (8): 879-916.

Godfrey, E.P. Study of Community Colleges and Vocational-Technical Centers, Phase I. Washington, D.C.: Bureau of Social Research, 1970. 357 pp. (ED 053 718).

Harmen, M. "Teaching a Course in Fantasy Fiction: Purpose and Method." Teaching English in the Two-Year College, Fall 1976, 3 (1): 47-49.

Jaeger, G.A. The Use of Masterpieces of World Literature in California Public Community Colleges: A Study in Purposes and Trends. Doctoral dissertation, University of Southern California, 1974.

Mertes, B.F. "The Non-Traditional Students' Non-Traditional Classroom." Community and Junior College Journal, February 1972, 42 (5): 29-32.

Purves, A.C. What is Achievement in Literature. Princeton, N.J.: Educational Testing Service, 1967. 11 pp. (ED 013 064).

Research and Development of Programs in the Junior College. National Conference on the Teaching of English in the Junior College, Arizona State University, 1965. Proceedings of the Tempe Conference. Archer, J.W., director; Ferrell, W.A., assistant director. Champaign, Ill.: National Council of Teachers of English, 1965.

Robertson, M.R. A Comparative Analysis of the General Education Programs in Church Related Colleges and Public Junior Colleges of California. Doctoral dissertation, University of Southern California, 1967.

Shugrue, M.F. The National Study of English in the Junior College. Washington, D.C.: American Association of Junior Colleges; New York: Modern Language Association of America; New York: ERIC Clearinghouse on the Teaching of English in Higher Education; Champaign, Ill.: National Council of Teachers of English, 1970. 18 pp. (ED 037 480).

Simonson, H.P. "Freshman English: An Apologia." Journal of Higher Education, June 1967, 38 (6): 323-326.

Weingarten, S., et al. English in the Two-Year College. Report of a Joint Committee of the National Council of Teachers of English and the Conference on College Composition and Communication. Champaign, Ill.: National Council of Teachers of English, 1965. 128 pp. (ED 013 604).

NATURAL SCIENCES FOR GENERAL EDUCATION

Curtis W. Cox

"General education is now a disaster area. It has been on the defensive and losing ground for more than 100 years." So asserts the Carnegie Foundation for the Advancement of Teaching (1977, p. 11) in a recent commentary on the undergraduate curriculum. At another point in this treatise, general education is referred to as "the one-third of the curriculum...where nobody is in charge" (p. 16).

This, and numerous other studies concerned with the status of general education in colleges and universities in the United States, laments the decline of nonspecialized learning designed to provide a common core of knowledge and experiences for all "educated" men and women. Most of such studies plead for a concerted effort to restore general education to at least a portion of its former role as a viable component of American higher education.

After completing an extensive study of curriculum changes between 1967 and 1974 at 271 colleges and universities, Blackburn and his associates (1976) report that "The number of classes required in each of the disciplin-

ary areas--humanities, natural sciences, and the social sciences--has declined" (p. 34). Moreover, their findings indicate that, "When students elected courses outside their major division, the courses were more likely to be in the humanities or social sciences than in the natural sciences" (p. 35).

Similarly, Brawer and Friedlander (1979) note that "Student interest in science is low, and recent reports show that a trend away from the sciences is likely to accelerate in that enrollments in high school science courses are decreasing, particularly those in chemistry, physics, and biology" (pp. 10-11). Thus, it appears that the scientific literacy of the nation may be expected to further decline unless positive measures are taken to reverse this trend and to provide courses of study with a broader appeal to non-science majors.

Although there has been some speculation about the reasons why students increasingly avoid courses in the natural sciences, there have been no definitive studies to substantiate the various suppositions that have been offered as logical explanations for this trend (Blackburn et al., 1976). One suspected cause for the failure of non-science majors to choose electives in the natural sciences is the paucity of general introductory courses available to them. Brawer and Friedlander (1979) report that "Our study substantiates the observation that a relatively low percentage of two-year colleges offered a general introductory course in a science or social science area intended primarily for non-majors or non-degree oriented students" (p. 9).

This article takes a closer look at the availability of natural science courses for non-majors in two-year colleges as indicated by data from the Center for the Study of Community Colleges' study of science and science related technology programs, conducted under a grant from the National Science Foundation. Although this is the same data set used by Brawer and Friedlander, this study is based on a somewhat different selection of variables, and it concerns itself exclusively with those courses in the natural sciences which are designed for the non-science major. The relative abundance of such courses, together with the similarities and differences between them and the corresponding courses intended for transfer students majoring in the natural sciences, delineates current efforts to promote the understanding and appreciation for the sciences by the general public.

THE STUDY

The data for this study were obtained from responses to the Center for the Study of Community Colleges' survey of science instructors. This eight-page survey form was mailed to 1,275 faculty members who were teaching one or more sections of science or science related technology at one of the 175 two-year sample colleges. Results of that survey are thought to be representative of two-year colleges throughout the country because of the high response rate (85%) and the careful selection process employed.

For purposes of the study described here, "natural sciences" included only those classes in the biological and physical sciences that were considered appropriate to the general education of the two-year college student. The specific courses are shown in Table 1, together with the number of sections designated for each category.

Table 1

Natural Science Courses for General Education

Academic Area	Number of Sections Designated for	
	Science Majors	General Education
Biological Sciences	(21)	(26)
General biology	13	19
Advanced biology	0	0
Botany	3	2
Zoology	4	3
Ecology	1	2
Physical Sciences	(52)	(69)
Introductory chemistry	26	17
Advanced chemistry	12	0
Geography	0	8
Geology	1	6
Earth/space sciences	0	8
Physics - non-calculus	5	8
Physics - calculus	8	0
Interdisciplinary physical sciences	0	16
Environmental science and technology	0	6
TOTALS	73	95

Survey respondents had been asked to indicate whether each course section was designed for one or more of nine classifications of students listed on the questionnaire. A course was here considered to be designed for general education if it was designated by any of the following categories:

> Designed for transfer students majoring in a non-science area
>
> Designed as a general education course for non-transfer and non-occupational students
>
> Designed for further education or personal upgrading of adult students

Likewise, a course was determined to be intended only for science majors if it was reported to be:

> Designed for transfer students majoring in one of the physical or biological sciences, engineering, mathematics, or the health sciences (e.g., pre-medicine, pre-dentistry)

These groups were selected to be mutually exclusive; i.e., any section that was designated to be appropriate for both general education and for science majors (as defined above) was excluded from this analysis. Neither were those sections designated as developmental (remedial) nor those intended for occupational-technical programs considered in this investigation.

FINDINGS

As indicated in Table 1, of the 168 sections of natural sciences included in this study, 95 (57%) were designated for general education and 73 (43%) were designated for science majors. Since these are mutually exclusive groups, it is now possible to examine relevant characteristics of each group to determine how science courses for general education differ from those intended for science majors. Are there perceptible differences in the overall goals of these courses, in the instructional methods employed, in the types of activities prescribed, in the course requirements, grading procedures? Some of the more pertinent findings, as indicated by the survey responses, are summarized in the following pages.

Goals

Science instructors perceive clearly identifiable differences between purposes of natural science courses for general education and the purposes of similar courses offered for science majors (Table 2). The most commonly

Table 2

Indicated Goals for Natural Science Courses

Quality	Courses Designed for	
	Science Majors	General Education
Group A		
1. Understanding/appreciate inter-relationships of science and technology with society	15.1% *	74.7%
2. Be able to understand scientific research literature	1.4%	0%
3. Apply principles learned in course to solve qualitative and/or quantitative problems	75.3%	20.0%
4. Develop proficiency in labora-tory methods and techniques of the discipline	4.1%	4.2%
Group B		
1. Relate knowledge acquired in class to real world systems and problems	23.3%	61.1%
2. Understand the principles, con-cepts, and terminology of the discipline	72.6%	31.6%
3. Develop appreciation/understand-ing of scientific method	2.7%	6.3%
4. Gain "hands-on" or field experi-ence in applied practice	0%	0%
Group C		
1. Learn to use tools of research in the sciences	6.8%	5.3%
2. Gain qualities of mind useful in further education	37.0%	47.4%
3. Understand self	1.4%	4.2%
4. Develop the ability to think critically	53.4%	41.1%

* NOTE: Percentage of respondents selecting specific quality from each group as the one most desired for their students to achieve

identified goals of courses for science majors are: (1) Students should be able to apply principles learned in the course to the solution of qualitative and quantitative problems (75%)*, (2) Students should understand the principles, concepts, and terminology of the discipline (73%), and (3) Students should develop the ability to think critically (53%).

In sharp contrast, the courses designed for general education were said to be intended to help students understand and appreciate interrelationships of science and technology with society (74%), help students relate knowledge acquired in class to real world systems and problems (61%), and develop in students those qualities of mind which will be useful in further education (47%). A close fourth to this last objective was the development of the student's ability to think critically (41%). Thus, it can be seen that marked differences exist between the stated purposes of natural science courses for general education and those designated for science majors.

Methods of Instruction

Table 3

Instructional Methods

Activity	Courses Designed for	
	Science Majors	General Education
Lecture by instructor	38.5%**	45.3%
Guest lecturers	0.1%	0.5%
Student verbal presentations	1.3%	1.5%
Class discussion	8.6%	9.9%
...film or taped media	3.1%	7.0%
Simulation/gaming	0.3%	0.1%
Quizzes/examinations	9.5%	8.3%
Field trips	0.4%	1.5%
Lecture/demonstration experiments	3.7%	5.8%
Laboratory experiments by students	29.7%	17.4%
Laboratory practical exams and quizzes	2.5%	1.2%

*All percentages in text are rounded.

**NOTE: Mean percentage of class time devoted to various activities

A casual inspection of Table 3 reveals relatively minor differences in instructional methods employed in the two types of courses. The primary difference is a greater emphasis on laboratory work for the science majors. It also appears that the general education courses make slightly greater use of teaching aids in the form of film or taped media. Instructors in both types of courses rely most heavily on their own lectures as a primary method of instruction.

Grading

Table 4

Major Components of Students' Grades

Activity	Courses Designed for	
	Science Majors	General Education
Papers written outside of class	.0%*	4.2%
Objective tests	52.1%	72.6%
Essay exams	58.9%	40.0%
Field reports	1.4%	.0%
Workbook completion	2.7%	2.1%
Class attendance	.0%	5.3%
Participation in class discussions	1.4%	2.1%
Individual discussions with instructor	1.4%	.0%
Research reports	1.4%	.0%
Homework	2.7%	3.2%
Laboratory reports	30.1%	16.8%
Laboratory exams	16.4%	8.4%
Problem sets	4.1%	1.1%

*NOTE: Percentage of instructors assigning 25 percent or more of student's grade to this activity

Objective type tests are widely used by both groups of instructors. Nearly three-fourths of those teaching classes for general education reported that 25 percent or more of the student's grade was determined by objective tests, as compared to just over half of those teaching classes for science

majors. Interestingly, a greater proportion of the courses for science majors (59%) than those for general education (40%) used essay tests as a major component of the student's grade. A greater emphasis on laboratory work for science majors is also reflected in the grading process, consistent with the relative amount of class time devoted to this kind of activity (Table 4).

Course Emphasis

Table 5

Course Emphasis

Student Ability	Courses Designed for	
	Science Majors	General Education
Mastery of a skill	61.1%*	15.8%
Acquaintance with concepts of the discipline	94.5%	81.1%
Recall of specific information	39.7%	40.0%
Understanding the significance of certain works, events, phenomena, and experiments	56.2%	57.9%
Ability to synthesize course content	53.4%	43.2%
Relationship of concepts to student's own values	8.2%	30.5%

* NOTE: Percentage of instructors who considered these student abilities to be very important

Table 5 shows the relative emphasis placed on various student abilities by the instructors of natural science courses. While 62 percent of the instructors indicated that mastery of a skill was a very important ability to be attained by science majors, only 16 percent believed it to be a very important ability for general education students. On the other hand, instructors of science courses for general education showed greater concern that their students understand the relationship of concepts of the discipline to their own system of values (31% of this group indicated that they considered this a very important student ability, as opposed to 8% of the instructors

of courses for science majors). Also, those teaching science majors placed slightly greater emphasis on the student's acquaintance with concepts of the discipline (95% vs 81%) and on the student's ability to synthesize course content (53% vs 43%).

Types of Tests and Exams

The greater emphasis on quantitative relationships and the use of mathematics in science courses for science majors is reflected by the types of tests and examinations used in those courses, as shown in Table 6.

Table 6

Types of Examinations

Type of Question	Courses Designed for	
	Science Majors	General Education
Multiple response	42.5% *	74.7%
Completion	32.9%	29.5%
Essay	45.2%	43.2%
Solution of mathematical type problems	60.3%	22.1%
Construction of graphs, diagrams. . .	52.1%	14.7%
Derivation of a mathematical relationship	12.3%	.0%

* NOTE: Percentage of instructors indicating they frequently used each type of question in written quizzes and examinations

Mathematical type problems were frequently used in written tests and exams by over 60 percent of the instructors of courses designed for science majors, but only by 22 percent of the general education group. Similarly, far greater use of graphing (52% vs 15%) and mathematical derivations (12% vs 0%) was reported by instructors in classes for science majors. Instructors of science courses for general education reportedly made frequent use of multiple response testing (75%), while only 43 percent of the instructors of courses for science majors frequently used such tests.

Other Differences

Interdisciplinary approaches to natural science courses for general ed-

ucation were somewhat popular. Eight of the 95 classes designed for this group were reported to be interdisciplinary in content, and five respondents indicated that instructors from other disciplines were involved in the course planning. Only one such effort was reported by instructors of courses for science majors.

Interestingly, prerequisites were required for 78 percent of the courses for science majors, but only 14 percent of the courses for general education students. This, along with the previously noted differences in mathematical emphasis, indicates clear distinctions between the two types of courses.

There is some indication that the instructors of courses for general education make more extensive use of media in their science teaching. Twenty-three percent of this group reported frequent use of films in their classes, while none of the instructors of classes for science majors reported more than occasional use. Slightly greater utilization of filmstrips, slides, videotapes, and TV were also reported in the general education classes.

Except for the four courses for general education reported to use a pass/no credit grading system (compared to one course for science majors), there appears to be little difference in the grading system employed for general education from that used for the science majors. In fact, a slightly larger percentage of the courses for general education (76% vs 71%) were reported to use a grading system that includes the possibility of a failing grade.

In terms of faculty characteristics, most differences between the two groups were slight, with approximately 70 percent of the instructors in both categories having between five and twenty years teaching experience at a two-year college. There was a somewhat larger percentage of part-time instructors in the general education courses (14%) than in the courses for science majors (3%), and those teaching courses for science majors tended to have attained somewhat higher academic degrees (34% held doctorates, compared with 21% of those teaching general education courses).

As for the colleges themselves, well over 90 percent of the courses in both categories were offered in comprehensive, public, two-year colleges, mainly in the west, south, and midwest. Science courses for general education were found most often in the larger colleges; 81 percent of these courses were offered at colleges having enrollments of 2,500 or more. By contrast, nearly one-third of the science courses for science majors were taught at colleges

having fewer than 2,500 students.

Finally, science courses for science majors were found to be fairly evenly distributed among urban (29%), suburban (40%), and rural (32%) two-year colleges. Science courses for general education, however, were found predominately in suburban colleges (56%), leaving less than half of these courses to urban and rural colleges combined.

CONCLUSION

The findings of this study indicate that a significant effort is being made in the two-year college to provide instruction in the natural sciences for non-science majors. Not only were there more courses in the sciences for general education than for science majors, but these courses were shown to be distinctly different in purpose, in subject matter emphasis, in the selection of classroom activities, and in the items used for student evaluation.

In general, the courses designed for science majors were reported to be more content-oriented and more quantitative (requiring greater use of mathematics), and they placed greater emphasis on student laboratory experiences. The courses designated for general education reflect greater concern for a qualitative understanding of scientific principles and their implications for the individual and for society. These distinctions seem entirely appropriate and in keeping with the aims of general education.

It should be noted, however, that these data do not show what fraction of the two-year college student population was actually enrolled in a natural science course of any kind. Other studies indicate a general decline in the number of science courses for electives (Blackburn et al., 1976). There is unquestionably room for renewed efforts to attract students to the natural sciences, both as a major field of study and as a part of their general education experiences. Even though science classes for general education stress the relevance of the discipline to the "real world," there is little evidence that these courses utilize many of the strategies that might forge a stronger link between the two. For example, interdisciplinary courses are still quite rare (only nine cases reported out of the 168 sections included in the study), and the use of field trips, newspapers, TV, etc., was practically non-existent. Perhaps it is time to launch a national effort to retrain teachers in ways to use current events and modern technology in teaching the natural sciences.

One rather disturbing thought arises from the data of this study: it was noted that natural science courses for science majors were found rather uniformly distributed among the colleges in this sample, irrespective of the size or location of the college. However, those natural science courses which were designated specifically for general education were found predominately in suburban colleges and in those with enrollments of 2,500 or more students. This leads one to suspect that science courses for general education may be considered something of a frill that cannot be afforded by the smaller or poorer colleges. If this is indeed the case, then natural science faculties need to join forces with the friends of general education to promote increased student interest and concern for the sciences. Collectively, these groups may need to prevail upon college administrators and governing boards to consider the necessity for a scientifically literate public--a legitimate need which cannot be dismissed as an educational frill or a luxury.

Perhaps Tyler (1970) had a valid point when, almost a decade ago, he called on all of higher education to "confront the challenge of human extinction." He predicted that "between 1970 and 2000, the top item on mankind's agenda will become survival of the species"(p. 51). "Making survival the prime raison d'être of higher education could breathe new life into the curriculum, inspiring urgency and relevance in both the hard and soft sciences" (p. 55).

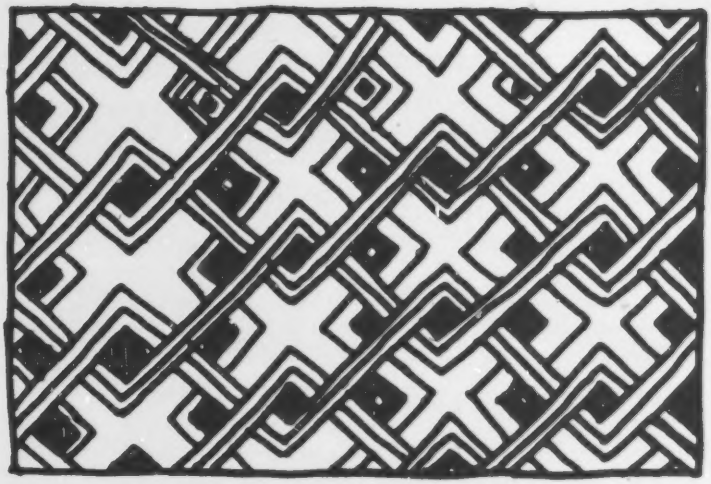
REFERENCES

Blackburn, R., et al. Changing Practices in Undergraduate Education. A Report for the Carnegie Council on Policy Studies in Higher Education. Berkeley, Calif.: Carnegie Council on Policy Studies in Higher Education, 1976. 62 pp. (ED 130 575).

Brawer, F.B., and Friedlander, J. Science and Social Science in the Two-Year College. Topical Paper No. 69. Los Angeles: ERIC Clearinghouse for Junior Colleges, 1979. 37 pp. (ED 172 854).

The Carnegie Foundation for the Advancement of Teaching. Missions of the College Curriculum: A Contemporary Review with Suggestions: A Commentary, 1977, 2 (3). San Francisco: Jossey-Bass Publishers, 1977.

Tyler, G. "Everybody's Core Curriculum." Change, May-June 1970, 2(3): 51-55.



THE SCIENCE CURRICULUM

Darrel A. Clowes

The purposes of the community college curriculum are presented in the literature as discrete functions, each served by a component of the curriculum. This survey of science, social science, and science-related technical courses in two-year colleges provides a unique opportunity to see how these general curriculum functions translate into specific courses, and how these courses are perceived by the instructing faculty. The purposes of this study, which utilized the techniques of secondary analysis on survey data gathered by the Center for the Study of Community Colleges, were to identify the primary curriculum functions appropriate for the two-year college, report the manner in which these functions were translated into courses, and analyze instructors' perceptions of those courses. A particular interest here was the opportunity to explore the curriculum functions served by any one particular course. A second interest served by this study was curiosity about variations associated with regions of the country. A final area of interest

was course completion rates as an indirect measure of success for the perceived curriculum functions.

IDENTIFICATION OF CURRICULUM FUNCTION

Most writers identify the transfer function as a historically important and primary function of the community college (Carnegie Foundation, 1977; Monroe, 1972; Reynolds, 1969; Thornton, 1972). Credit courses serving the transfer function are designed to prepare students to enter senior colleges and universities by providing courses and programs parallel to the first two years of the curriculum in a baccalaureate institution. The same writers identify the general education function within the community college but use various definitions which tend toward increased specificity as one moves forward in time. The culminating definition, and the one used for this study, is from the Carnegie Foundation for the Advancement of Teaching, identifying general education as that function which

1. Builds skills for advanced studies and lifelong learning;
2. Distributes time available for learning in such a way as to expose students to the main stream of thought and interpretation--humanities, science, social science, and the arts;
3. Integrates learning in ways that cultivate the student's broad understanding and ability to think about a large and complex subject (1977, p. 165).

This definition is particularly useful because it highlights a conflict for courses designed to meet this general education function. The first purpose of building skills for advanced studies generally refers to preparation in writing and/or mathematical skills, but this and the second purpose can be broadened to imply preparation for advanced work in an academic field, thereby conflicting or overlapping with the transfer function.

The purposes ascribed to general education suggest a need for special courses geared to the non-major as the best way to avoid conflict between the transfer function and the skill-building component of the general education function. Another function, preparation for work, is clearly identified as primary by writers focusing upon the two-year college curriculum (Monroe, 1972; Reynolds, 1969; Thornton, 1972). It is considerably less an emphasis for writers with a primary interest in the four-year college and university. The preparation for work function is served within this study where science-related occupational-technical courses and programs "prepare students for immediate entry, after leaving the community college, into mid-

dle-level vocations or to upgrade the skills of persons already employed" (Monroe, 1972, p. 82).

Still another function of the community college curriculum is remediation. Early writers in the field give little recognition to this aspect (Reynolds, 1969) while later ones nod acknowledgment (Thornton, 1972) and the more current writers give considerable emphasis (Carnegie Foundation, 1977; Roueche and Snow, 1977). The remediation function is served where specific courses are developed to provide assistance in skill development and/or personal development to increase the ability of the student to cope with college (Clowes, 1979).

THE STUDY

This study proposes that four functions for the community college curriculum are described in the literature with an expectation that these are discrete functions generally served by discrete courses. Monroe (1972) is an exception to this as he acknowledges the need for the transfer and general education functions to concurrently be served by the same course. The majority of the literature, however, describes these separate functions as served by separate courses.

In the survey administered by the Center for the Study of Community Colleges (1978), instructors were asked to indicate each of the items that properly described their course from the following listing:

a. Parallel or equivalent to a lower college-level course at transfer institutions;

b. Designed for transfer students majoring in one of the natural resources fields (e.g., agriculture, forestry) or in an allied field (e.g., nursing, dental hygiene, etc.);

c. Designed for transfer students majoring in one of the physical or biological sciences, engineering, mathematics, or the health sciences (e.g., pre-medicine, pre-dentistry);

d. Designed for transfer students majoring in a non-science area;

e. Designed for occupational students in an allied health area;

f. Designed for occupational students in a science technology or engineering technology area;

g. Designed as a high school make-up or remedial course;

h. Designed as a general education course for non-transfer and non-occupational students;

i. Designed for further education or personal upgrading of adult students;

j. Other;

Instructors were advised to designate one or more of these items as descriptive of the particular section that they were teaching. To analyze responses to this section each response item was designated as serving a particular curriculum function. Items a, b, and c were identified as serving a transfer function; items d, h, and i were identified as serving the general education function; items e and f were identified as serving the preparation for work function; and item g was identified as serving the remediation function. These assignments are arbitrary, but they have the virtue of being internally consistent and of being consistent with the literature.

These data, then, are drawn from instructors' perceptions about their courses and about the goals their courses serve. Since instructors were able to respond to more than one item, the multiple purposes served by a single course/section are revealed.

Table 1

Distribution of Course/Sections by Perceived Curriculum Functions

Curriculum Functions	Number of Course/Sections
Transfer & General Education	576
Transfer & Preparation for Work	372
Transfer & Remediation	44
General Education & Preparation for Work	289
General Education & Remediation	85
Preparation for Work & Remediation	38

Table 1 presents the multiple function served by the full range of course sections surveyed. By crosstabulating the sections to show those that are identified as serving more than one function, Table 1 captures the complexity presented by the multiple listings obtained for most sections. For example, of the 1,275 sections for which information is reported, 992 indicated that they served a transfer function. The totals for general education and for the other function areas combined produce a frequency that far exceeds the 1,275 sections surveyed, thus indicating the magnitude of multiple course

functions. The vast majority of courses offered in the two-year college serve more than one curriculum function. Indeed, many serve more than two. This was the first and strongest finding from the assessment of curriculum function as served by specific courses in two-year colleges. While there will be some courses that serve only a transfer function, the data do not indicate the number to be very large. It is logical to argue that courses may well serve both the transfer and the general function, as Monroe (1972) does, and it is apparent that many courses in the community college try to do this.

In spite of the strong counter argument that to combine these two functions is to lose the essence of one or both (Carnegie Foundation, 1977; Thornton, 1972) this is clearly a strong pattern within the two-year college curriculum.

Of the 992 sections serving a transfer function, almost a third (372) also serve a preparation for work function, defined in this study as a science or technical course or a health-related course. The indication that 44 of these transfer related courses also are perceived to serve a remedial function is startling.

That the general education function is not a discrete function is clearly evidenced when we see that almost 30 percent of all multiple function courses, which also serve the general education function, are expected to serve a preparation for work function, and further, that almost nine percent of all courses serving a general education function also are expected to serve a remediation function. Even the preparation for work function is not discrete. Over one-half of the course sections displayed serve both a preparation for work and a transfer function, while approximately 40 percent of the sections are expected to carry out a general education function along with their purpose as technical training courses. In most cases remediation is a fairly discrete area, although in these credit-bearing courses we found few that were expected to serve only the remediation function while over half were expected to also serve a general education function. The primary impression derived from this examination of the data is that curricular functions in the two-year college are neither clear nor discrete at the course and section levels. While there may be clear senses of direction in the catalogs and in the minds of deans of instruction and department chairpersons, for the instructor in the classroom reality is often a perception of a multitude of functions to be served by a single course section.

Table 2

Course Sections Arranged by
Function Assigned by Instructor

Academic Area	Total # Sections in Sample	Number of Sections with Curriculum Function Assigned by Instructors			
		Transfer	General Education	Preparation for Work	Remedial
Agriculture					
Animal Science	8			5	
Plant Science	11			6	
Biological Sciences					
General Biology	66	59	47		(3)
Zoology	13	11			
Anatomy/Physiology/ & Human Biology	55	38	19	45	
Microbiology	11	10		9	
Engineering					
Graphics & Design	23	18	12	18	
Electrical Eng.	66			61	
Mechanical Eng.	23			18	
Industrial Eng.	6			5	
Mathematics & Computer Sci.					
Math - Intro	187	107	106	64	101
Math - Advanced	24	24			
Math - Applied - Tech.	41			26	(8)
Math - Applied - Non-Tech.	99	59	73		(18)
Statistics	14	13	12	7	
Computer Sci.	30	21	13	15	
Physical Sciences					
Chemistry - Intro.	66	56	24	34	(11)
Chemistry - Advanced	16	14			
Geography	17	15	15		
Geology	15	15	12		
Earth Sci.	14	13	13		
Physics - Non-Calculus	36	24	12	26	
Physics - Calculus	9	9			
Intro. Physical Sci.	19	14	17		
Social & Behavioral Sciences					
Anthropology/Archeology	16	16	12		
Psychology	143	129	98	53	
Sociology	94	89	77	32	
Economics	69	60	49	32	
Interdisciplinary Soc. Sci.	15	13	12	6	

NOTE: Total n reduced to 1206 since each cell represents 1% or more of all sections assigned that function and includes 1/3 or more of all sections for the course area.

Table 2 displays curriculum function at the course level. It allows the identification of courses within a particular area that serve each of the various functions and also reveals the overall design and structure of the curriculum at a course level. This table was restricted to include those courses offered with at least minimal frequency across the nation and to control for consistency of function by establishing a minimum frequency for each cell. Certain areas appear worthy of specific comment.

Under the biological sciences, general biology is most frequently offered and most frequently serves the transfer and the general education functions. Apparent is the potential conflict between the goals of a transfer program for the biology major and the general education function for the non-major. Courses in anatomy/physiology/human biology are frequently offered and they pose a special set of problems since this area is often used to serve three primary functions. It would appear that the preparation for work function would be most directly in conflict with the general education function and would pose some difficulties for the transfer function as well. Under the engineering area, graphics and design would appear to have the same basic conflict as anatomy/physiology/human biology. The other engineering offerings appear to be very discrete in function and to maintain curricula integrity.

Under the mathematics and computer science areas the most frequently offered courses are clearly introductory math and applied non-technical mathematics. Introductory math is a special case with obvious difficulties in meeting its various functions. The conflict between the transfer and the remedial function is obvious. Pressure to direct this course toward general education while also serving the transfer, remediation, and preparation for work functions would make this a very difficult course to organize. The applied non-technical mathematics presents its own constellation of functions and again would appear to be an area needing attention.

In the physical science area, introductory chemistry is the most frequently offered transfer course and general education course. However, it serves other functions and thus presents the problem of identifying an appropriate mix of functions for each section. A similar problem may exist for non-calculus physics. Geography, geology, and earth science present a clear pattern of courses that serve both a transfer and general education function in the blending that appears typical for introductory level courses in the

two-year college. Under the social and behavioral sciences, psychology and sociology are most frequently offered and serve many functions. This pattern is also true of the interdisciplinary courses offered in the physical sciences and the social sciences where, again, multiple functions are served.

Brawer and Friedlander (1979) are concerned that very few specialized science and social science courses are offered at two-year colleges. This is consistent with the finding of this study that introductory level courses are forced to serve many functions--often more functions than reasonable. Perhaps this confounding of curriculum functions might be reduced if the second level general course or the first course for the major were offered more frequently, thus reducing the demands upon introductory courses. The use of special courses for the major and second level general courses is effective in mathematics and in chemistry. Several other areas, which are not shown in Table 2 because their courses are offered infrequently, are instances where more specialized courses, which serve only one function, are offered.

THE CURRICULAR PATTERNS

The previous analyses indicated a substantial crossing of curriculum functions within course/sections and a systematic variation of functions across courses. The next step in analysis was to return to the general level of the curriculum to look for systematic variations in the functions served by particular courses on the three variables available: the size of the institution; the urban, suburban or rural nature of the institution, and the institution's region.

Size

Each course/section was reported by the size of the offering institution. This assignment by size was taken from the 1977 Community, Junior and Technical College Directory. Course/sections were identified by the transfer, general education, preparation for work, and remediation function and then crosstabulated by size of the offering institution. When the chi square test for fit was run, no significant difference was found. This suggests that the frequency with which course/sections serve each of the functions of the curriculum is constant across institutions and that the size of an institution does not significantly affect the pattern of its offerings.

Urban, Suburban, Rural

In the same way there was a self-reported designation of each institution as either urban, suburban, or rural. A similar distribution of functions was arranged and crosstabulated with the assignment of the institution in terms of its urban, suburban, rural designation. The chi square test was run on this distribution and again there was no significant difference. This suggested that there was no systematic variation in the pattern of transfer, general education, preparation for work, or remedial courses by the size or the degree of urbanity of the institution. In both of these tabulations there appeared to be a slight (nonsignificant) underrepresentation of remedial courses in the small and the rural institutions. Of interest was the finding that the preparation for work course/sections were symmetrically distributed among the urban, suburban, and rural institutions, and among the smaller to larger institutions. The work-related programs identified in this survey are science related or in the health field and therefore are generally programs with high technologies. It would not have been surprising to find that the smaller and more rural schools were less able to provide high technology programs, but that expectation was not supported by these data. It appears that the high technology programs and the health-related programs are offered widely, probably because of federal funding which is less responsive to local variations in size and location.

Region

The next variable used to study variation in curricula patterns was region defined as the accrediting region of the institution. The assignments of region also came from the 1977 Community, Junior and Technical College Directory. Table 3 displays the assignment of course section by curricula functions and by region with the row percentages for each cell in parentheses. The chi square test for significance was run and a significant difference was identified.

Table 3

Frequency of Course/Sections for Curriculum Function by Regional Accrediting Association

Regional Accrediting Association	Curriculum Functions								
	Transfer		General Education		Preparation for Work		Remediation		
New England	33	(45)	25	(34)	11	(15)	5	(7)	(101)*
Middle States	117	(40)	92	(34)	76	(26)	11	(4)	(101)
Southern	258	(41)	189	(30)	134	(21)	49	(8)	(100)
North Central	203	(38)	155	(29)	137	(26)	35	(7)	(100)
Northwest	55	(41)	39	(29)	35	(26)	6	(4)	(100)
Western	288	(42)	214	(31)	141	(21)	43	(6)	(100)

(χ^2 = 18.608, df = 15, $p \leq .01$)

*Row percentages

Table 3 indicates the New England area to be significantly different from the other areas. Transfer and general education in New England are much more dominant functions; this is offset by the significantly reduced emphasis given to preparation for work courses. With the exception noted, there is a relatively even distribution of transfer functions across the remaining regions. Under preparation for work, colleges in the Middle States, North Central, and Northwest areas are each overrepresented in the number of courses serving this function, while the Southern and Western areas are mid-range. Remedial course work is significantly overrepresented in the Southern area and underrepresented in the Middle States and the Northwest regions. Thus there is regional variation of emphasis among curriculum functions. It would be hazardous to draw strong conclusions from these data, but one can infer a greater emphasis on remedial work in the Southern region, a surprising under emphasis on science-related preparation for work in the Southern and Western regions, and in New England a not surprising emphasis upon technical training. New England is an area where private liberal arts education has dominated, and these data suggest that two-year colleges in New England have moved to imitate rather than to compensate for this pattern. It would appear that there is room for growth

and improvement in diversity of curriculum offerings in that area, and room for continued growth in science-related technical programs in both the Southern and Western regions.

COMPLETION RATES

The rate at which students complete the various courses for which they have enrolled is one internal measure of the success of a course and, indirectly, a measure of the success of the functions served by that course. An enormously wide range of variables could affect completion rates. One of these variables is the gender of the student. The survey allowed a calculation of separate course completion rates for males and females. This seemed an important consideration since the survey covered many science and science-related courses in the occupational and technical fields, and since a strong body of evidence suggests that females are less likely to enroll in mathematics and hard science courses at the college level. The data were separated for completion rated by course/section (Figure 1).

Figure 1

Mode of Completion Rate by Sex and Curriculum Function

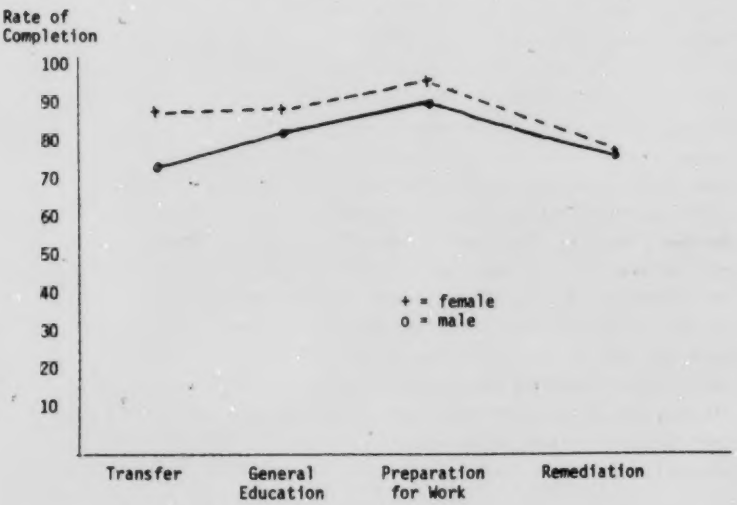


Figure 1 represents the broadest overview of these data. This figure displays a comparison of the mode for completion of course sections designated as serving the transfer, general education, preparation for work, and remedial functions for both males and females. Females consistently recorded a higher rate of completion within a course/section than did males for most curruculum functions. The single exception was the remediation function where the difference was not measurable.

A more complete analysis was carried out to assess rates of completion by curriculum functions as displayed in Table 4. Figure 1 depicts male and female completion rates as clearly different and systemically varying.

Table 4

A. Male Course Completion Rate by Curriculum Function Showing Frequency of Sections for Each Completion Rate

	Curriculum Function							
	Transfer		General Education		Preparation for Work		Remediation	
Completion Rate	n	%	n	%	n	%	n	%
90 - 100	313	33	217	30	214	40	29	20
80 - 89	218	23	168	24	113	21	21	14
70 - 79	160	17	119	17	81	15	23	15
60 - 69	127	13	91	13	59	11	16	11
50 - 59	64	7	53	7	27	5	23	15
49	72	8	66	9	40	8	37	25
		101		100		100		100

(χ^2 = 84.542, df = 15, p≤.01)

Table 4 (continued)

B. Female Course Completion Rate by Curriculum Function Showing Frequency of Sections for Each Completion Rate

	Curriculum Function							
	Transfer		General Education		Preparation for Work		Remediation	
Completion Rate	n	%	n	%	n	%	n	%
90 - 100	447	47	294	41	324	61	37	25
80 - 89	186	20	155	22	66	12	27	18
70 - 79	107	11	77	11	33	6	12	8
60 - 69	70	7	60	8	27	5	20	13
50 - 59	32	3	31	4	18	3	17	11
49	112	12	97	14	66	12	36	24
		100		100		99		99

($\chi^2 = 98.88$, df = 15, $p \leq .01$)

The data displayed in Table 4 indicate that within the male course-taking population there is a significant variation in rate of completion by curriculum function. This also holds for the female population, although the patterns are different. Table 4, part A shows that 33 percent of the males enrolling in a course serving a transfer function enroll in sections where the male completion rate is 90 percent or more; 23 percent enroll in sections where the course completion rate is 80 to 89 percent, etc. The area of significant variation within the male course completion patterns shows in the increased likelihood of completing courses in the preparation for work area as opposed to transfer or general education, and a strongly decreased probability of course completion in the remedial field. This suggests that the transfer function is operating in the two-year college; that the general education function, despite many laments over its demise, is also functioning in the community college; and that preparation for work is perhaps the most successful if not the most popular of the functions provided by the two-year college. The remediation function remains a difficult and troubling area with only marginal success in readying students for college work. The female course-taking patterns are similar to the male patterns in

that both the transfer and the general education functions appear quite healthy and show strong rates of completion. A mildly disquieting note within the female population is the disproportionately large number of females enrolled in course sections where females complete at less than 50 percent. This ballooning effect at the lowest rate of completion for females perhaps indicates the arrival in the two-year college of a new population of females with limited success in completing courses and achieving the functions of the curriculum. As previously noted the higher rates of completion for females compared to males is notable and is clearly evident in Table 4, part B. In the preparation for work area there is a notable finding in the 61 percent of females enrolling in course sections in which females complete the course at a rate of 90 percent or more. A substantial proportion of female course completers are enrolled in the allied health programs where master learning techniques are a well-established part of the instructional approach, and this might well account again for the high completion rate. Females are slightly more successful in completing remediation courses than are males, but remediation is still a notably unsuccessful area in the two-year college.

In conclusion, there is a significant difference in completion rates between males and females; within each sex, there is a significant variation by the curricula functions served in the various course sections. This variation is generally explained through the higher completion rates in the preparation programs and in the lower completion rates in the remediation programs. A finding of note is that the transfer and general education functions appear to be alive and well for both males and females in the two-year college.

CONCLUSION

This study has attempted to look at curriculum functions broadly defined and then has attempted to associate these functions with specific course sections. The vehicle has been the instructors' perception of the functions served by the section surveyed. The study has shown that courses can be identified by function, but that assignment is not clear because there is a preponderance of course sections serving multiple functions. Perhaps the most significant finding is the broad range of functions a particular course section frequently attempts to serve. The study also looked for variations in course patterns and, therefore, curricula functions by size of the in-

stitution, by its degree of urbanity, and by its region. The only significant variations were found when comparisons were made by geographic area.

Finally, completion rates for course/sections were used as an indirect measure of the success of a course and, therefore, the success of the various curriculum functions. This method of analysis produced evidence that transfer and general education functions were operative and successful. The preparation for work function showed the highest course completion rates but was served by fewer courses than either the transfer or the general education function. The remediation function was found to be existent but laboring with low rates of completion in most courses. It should be noted that this study reflects findings appropriate only to the natural sciences, selected social sciences, and science-related and health-related occupational/technical programs. A comparison of the results on studies replicated with other college curriculum would be most interesting.

REFERENCES

Brawer, F.B., and Friedlander, J. Science and Social Science in the Two-Year College. Topical Paper No. 69. Los Angeles: ERIC Clearinghouse for Junior Colleges, 1979. 37 pp. (ED 172 854).

Carnegie Foundation for the Advancement of Teaching. Missions of the College Curriculum: A Contemporary Review with Suggestions: A Commentary. San Francisco: Jossey-Bass Inc., Pub., 1977.

Clowes, D. "Form and Function." Journal of Developmental and Remedial Education, 1979, 3 (1): 2-3, 13.

Cox, C. Natural Science for General Education. Unpublished paper, 1979.

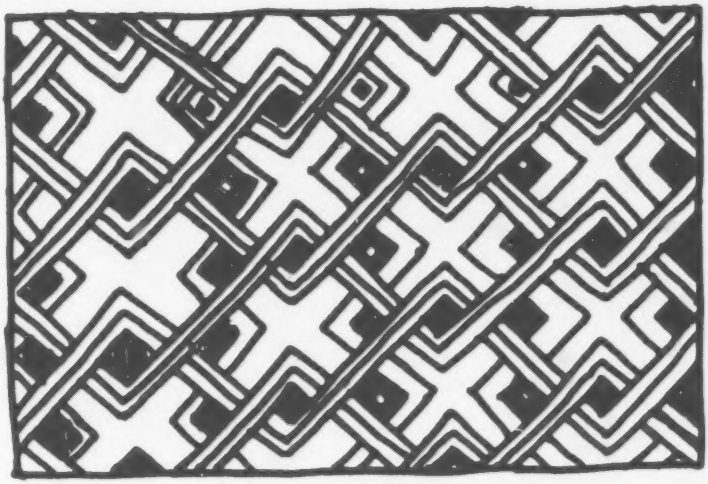
Monroe, C.R. Profile of the Community College: A Handbook. San Francisco: Jossey-Bass Inc., Pub., 1972.

Reynolds, J. The Comprehensive Junior College Curriculum. Berkeley, Calif: McCutchan Pub. Corp., 1969.

Roueche, J., and Snow, J. Overcoming Learning Problems: A Guide to Developmental Education in College. San Francisco: Jossey-Bass Inc., Pub., 1977.

Science Instructor Survey. Los Angeles: Center for the Study of Community Colleges, 1978.

Thornton, J. The Community Junior College. 2nd edition. New York: John Wiley, 1972.



REMEDIAL AND REGULAR MATHEMATICS: IS THERE A DIFFERENCE?

Thomas G. Doe

> "One of the unusual and distinctive features of the comprehensive junior college is its willingness and ability to provide both the facilities and instruction for varied subject matter for students with a wide range of academic ability as well as social and economic backgrounds."
>
> G. Robert Darnes (Beal, 1970, p. 1)

Darnes' quotation reflects a characteristic feature of the community college--to provide the necessary and alternative programs that will facilitate learning for its socially and intellectually differentiated clientele. Does the community college provide sufficient diversification in its programs to support Darnes' characterization? In order to examine this question, this study reviews the literature on remedial mathematics programs and compares their instructional techniques with those educational practices found in regular mathematics courses.

The instructor survey conducted by the Center for the Study of Community

Colleges provides the information needed to assess the differences in remedial and regular mathematics approaches. This survey obtained a data base which consisted of 128 remedial courses and 264 courses listed as part of the regular mathematics curriculum. These findings are presented following the literature review.

THE LITERATURE

The literature is replete with discussions of developmental programs for students who are inadequately prepared to cope with regular work. Mathematics is one area that is widely addressed. Pearlman (1977), for example, suggests that the largest percentage of developmental courses continues to be taught by the traditional lecture method. Although the popularity of this approach may be due to the fact that it diminishes reading and language difficulties characteristic of many unprepared students, innovations are now being introduced into remedial programs. Programmed texts, tutoring, mathematical laboratories, independent study, and mini-courses have become popular alternative teaching methods. In support of Pearlman's study, Frieson (1974) found a statistically significant correspondence between the number of non-lecture techniques and the feelings that students needs were being met. And Baldwin et al. (1975), in their comprehensive survey of developmental mathematics programs in the United States, reported that media and other alternative instructional techniques (audio-visual, audio-tutorial, tutoring, etc.) were rising in popularity, and that mathematics laboratories were being used as learning centers.

Baldwin's findings are supported by Beal (1970) and Lindberg (1976), who noted a continued use of the traditional approach as well as the development of alternative approaches in remedial courses. Muha (1974) described the standard instructional technique as comprised of lecture, demonstration, homework, frequent testing, and standard grading distribution, and also characterized alternative teaching methods by individualized instruction, the use of additional enrichment material, testing only at a mid-term and final, and liberal grading.

While many writers advocate the modification of remedial instruction, there is little indication of a demand for specialized instructors (Baldwin, 1975; Buerk, 1974). The lack of concern regarding the experience and quality of remedial course instructors may indicate that those people without "seniority" and those with part-time status are more likely to be teaching a course

comprised of less challenging and less intellectually gifted students.

Instructors, then, have relied predominantly on their own lectures and class discussions. While this is clear, the literature repeatedly refers to the use of varying forms of media in developmental programs (Baldwin, 1975; Beal, 1970; Lindberg, 1976; Medin, 1974; Pruitt, 1976). Similarly, the literature reveals that the textbook, either standard or programmed, is popular in developmental mathematics programs, as are the workbooks, problem books, and handout materials (Baldwin, 1975; Krupka, 1969; Lindberg, 1976). Typically, though, less reading is assigned in remedial mathematics courses than in regular mathematics programs because many students who lack mathematical skills are concomitantly deficient in English language skills (Block, 1968; Jason et al., 1976; Pearlman, 1977).

Consistent with several other studies, Pearlman (1977) reports that retesting is a valuable component of remedial programs. The frequency of testing and the opportunity to take a test over again until passing it reduces the pressure on the students and helps the student learn how to prepare and pass tests. The Baldwin (1975) report reiterates the use of tests, but also reveals that once students are enrolled in developmental courses they must pass them.

Grading practices in remedial courses follow the standard trend, and use of the letter grade remains a popular method of evaluation, even though innovative grading practices might be more consistent with the course intent. Certainly students might benefit from more time with their instructors. Paraprofessional and counseling assistance can be supportive elements for the remedial students' educational needs.

The literature continually refers to mathematics laboratories as learning centers, but their value appears to lie in the approach taken. Indeed, Rotman (1975) indicates that the nontraditional laboratory instruction is neither beneficial nor detrimental to a math program. For remedial courses there is need for an "augmental math learning center to make more efficient use of the instruction in the college algebra classroom and to facilitate learning and relearning of both prerequisite new skills and concepts" (Rotman, 1975, p. 23). Frieson (1974), Medin (1972) and Zwerling (1977) also refer to the use of a mathematics lab where many of the nontraditional instructional

techniques are incorporated into the instructional approach.

In summary, then, the literature indicates that while innovation is being introduced in developmental mathematics courses, there remains a strong reliance upon traditional techniques and methods. Most remedial courses tend to use the continued teaching practices found in regular mathematics programs and to rely heavily upon the traditional lecture-discussion technique. Developmental programs make active use of textbooks, workbooks, and problem sets as means of communicating and developing skills. While the common letter-grading system has been used primarily; alternative forms are now being introduced. Since remedial mathematics students may also possess poor reading skills and a lack of self-study skills, developmental programs may rely upon media, tutors, and other alternative facilities and may be concerned not to "overload" the slower students. Thus, audio-visual and audio-tutorial techniques are fairly commonplace in remedial programs rather than in the standard curriculum.

The mathematics departments participate as a whole in remedial programs; however, the individual professor is allowed a great deal of latitude in the presentation of the material. While many people suggest that instructors should be especially trained to teach remedial courses, not much care is actually taken in their selection. Random rotation, volunteer, or assignment characterize the methods used in selecting faculty for developmental students. Indeed, remedial courses are taught more by faculty with less teaching experience and by part-timers than the regular mathematics courses.

RESPONSES TO INSTRUCTOR SURVEY

The Center for the Study of Community Colleges' Instructor Survey supplied a comprehensive data base for the comparison of remedial and regular mathematics courses. This section reports responses to nine questions in the survey that facilitate a comparison of reports in the literature and actual data.

Class Time Allocation

Responses to a question regarding various class activities indicated that the lecture was used with about the same frequency in remedial and regular classrooms, with only a slightly higher degree of use in regular mathematics courses. For example, remedial classes utilize lectures 20 percent of the classroom time, and regular classes, 21 percent. A similar pat-

tern occurs in response to the amount of time used for discussion. However, remedial programs indicated a higher rate of testing than the regular math courses.

Media

Media were used by both mathematics programs. The regular math curriculum favored the traditional media (transparencies, charts, and 3D models) while remedial classes utilized a greater number and a greater variety of devices--audiotapes, filmstrips, and videotapes.

Reading Materials

When asked about their use of eight kinds of reading materials that might be available to students, mathematics instructors indicated only the textbook and syllabi as warranting much use. Textbooks were used more in regular math classes (79%) than in remedial classes (64%). More pages of reading were expected in regular classes, suggesting that because of the reading skill deficiency (or presupposed deficiency), less reading demands are made upon remedial mathematics students than students in regular classes.

When asked to evaluate satisfaction with texts used, the data support the literature. Baldwin (1975) and Lindberg (1976) found that 40 percent* of those surveyed were not satisfied or desired a change. The survey reported here revealed that 37 percent of the remedial instructors would like to change their texts. An important discrepancy between remedial and regular mathematics courses is that 25 percent of the regular courses faculty totally self-select their text materials while only 13 percent of the remedial faculty do so. This difference may be explained by the programmed schedule and nature of remedial courses.

Examinations and Grades

Regular math classes place a heavier emphasis on essays, exams, papers, and problem sets than do the remedial classes. Differences also pertain to grading practices. Remedial courses used the "ABCDF" system 52 percent of the time, while an alternative letter grade was used 21 percent. The regular math courses used the letter grade in 76 percent of the cases and some derivation in the others.

Activities and Classroom Assistance

Of ten possible responses to a question regarding out-of-class activ-

*All percentages in text are rounded.

ities, only tutoring was cited as a significant activity, with remedial math using tutors more than regular math courses.

Clerical help and tutoring were the most common forms of assistance for the math programs. Clerical help did not differ significantly between the remedial and regular courses, a rather surprising finding as Baldwin (1975) recommended the increased need for record-keeping aid. Paraprofessional aides were typically employed more by developmental courses than by regular math classes, a finding that is consistent with the literature (Baldwin, 1975; Jason et al., 1976; Medin, 1972).

Remedial programs also use forms of media that replace the instructor: audio-tape, video-tapes, and filmstrips are the most popular. The free time made available by the media allows the faculty to work with the specialized needs of the individual student. The differentiation thus occurs not in the utilization or availability of media but in the specific form used.

The Faculty

While recommendations for specialized instruction have been made, remedial instructors are typically chosen by random assignment or by volunteer. Great care has not been given to the selection of professors in developmental mathematics. The younger faculty, without the weight of seniority, are more likely to be assigned to the "less interesting" courses. The Center survey indicated a higher percentage of part-time faculty as opposed to full-time faculty involved in developmental mathematics courses.

CONCLUSIONS

Premises derived from the review of the literature are supported by the data drawn from the Instructor Survey. Primarily, these data reveal that the same emphasis has been placed upon the use of traditional instructional practices and facilities in the remedial mathematics as in the regular mathematics courses. However, the utilization of innovative media, alternative grading practices, and additional instructional aids was more prominent in the developmental courses which catered to a specialized clientele.

What did the study reveal? Despite the similarities with the standard curriculum and traditional methods, there is a strong indication that the remedial student is receiving specialized attention. Certainly the experimentation with media, counseling, tutoring, alternative grading, and pro-

grammed material reveal an acknowledgment that developmental programs need and can best utilize the facilities being developed by the technological and innovative advances and ideas of the day.

Remedial students in mathematics are likely to have similar deficiencies in other academic skills, and therefore need support and aid from specialized sources. The advent of media forms, which the student could use independently to learn the fundamental principles, enable instructors to concentrate on the development of the students' skills outside the principal subject area. Math instructors should not only be available to teach, they should also act as counselors and advisors to remove the "mental blocks" that may have inhibited a student from acquiring studying, reading, and/or mathematical skills.

The pessimistic assumption that the inexperienced and unmotivated faculty have been selected to instruct the remedial courses is supported by these data. However, one could reevaluate the data in an optimistic light that could also be applicable. Perhaps the indication that younger faculty instructs the remedial students is a positive development. Not only might a younger faculty member be more capable of "relating" to the student (acting as a peer, just as most tutors are student peers from the two-year college) but also with the development of special education degrees, the younger faculty member may possess the skills required to better teach this specialized clientele.

The emphasized use of paraprofessional aides and tutors in developmental courses has promoted the idea that the specialized student requires specialized attention. The promotion of alternative methods in grading and facilities utilized indicate the increased interest in developing the skills of the unskilled.

In essence, the remedial mathematics courses of the two-year community college are showing signs of instruction and facility usage that may be differentiated from the regular math curriculum. The acceptance of innovative and alternative techniques has begun to appear in the programs of remedial mathematics. But is this a growing transition or a static condition? The small percentages of innovative practices indicate both. Perhaps, then, only the burden of rising costs and decreased enrollments, characteristic of most contemporary higher educational institutions, will affect the continuance of innovative trends in remedial programs.

REFERENCES

Baldwin, J. et al. Survey of Developmental Mathematics Courses at Colleges in the United States. American Mathematical Association of Two-Year Colleges, 1975. 64 pp. (ED 125 688).

Beal, J. An Analysis of Remedial Mathematics Programs in Junior and Community Colleges. Unpublished paper, 1970. 23 pp. (ED 043 335).

Buerk, D. "Survey of Math Programs in Two-Year Colleges for Underprepared Students." New York State Mathematics Association of Two-Year Colleges Journal, Fall 1974.

Block, H.A. A Test of the Use of a Program of Instruction in Basic Mathematics Requiring Only Minimal Reading Skills for Use as a Remedial Tool for College Freshman. Final Report. Baltimore, Md.: Institute for Research in Behavioral Technology, Morgan State College, 1968. 36 pp. (ED 026 969).

Chinn, J.A. A Comparative Study of an Audio-Tutorial and a Traditonal Method of Teaching Intermediate College Algebra in the Community College Students. Doctoral dissertation, Florida Atlantic University, 1973.

Frieson, C. An Analysis of General Education Programs in Two-Year Colleges. A Research Report. Unpublished paper, 1974. 29 pp. (ED 094 841).

Jason, E. et al. Accelerated Program in Mathematics for Disadvantaged Students. Paper presented at the TRIO program conference, Fontana, Wisconsin, November 8, 1976. 36 pp. (ED 152 931).

Krupka, J.G. A Community College Remedial Program: A Description and Evaluation. Unpublished paper, 1969. 58 pp. (ED 030 420).

Lindberg, K. Preparatory Mathematics Programs in Departments of Mathematics. Unpublished paper, 1976. 45 pp. (ED 133 235). (Not available in hard copy.)

Medin, J. The Teaching of Developmental Mathematics in Community Colleges. Unpublished paper, 1972. 22 pp. (ED 075 197).

Muha, J.G. A Study Comprising the Traditional Approach Versus an Experimental Approach to Teaching Remedial Math in the Community College. Unpublished paper, 1974. 28 pp. (ED 104 488)

Muir, B.A. "A Survey of the Remedial Mathematics Programs at Two-Year Colleges of the City University of New York." Mathematics Association Two-Year College Journal, Fall 1973.

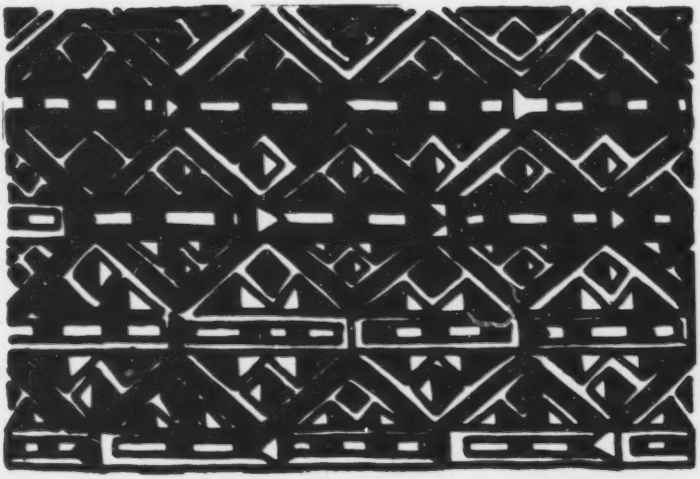
Pearlman, D.J. Alternative Programs in Mathematics in the Community College. Unpublished paper, 1977. 12 pp. (ED 142 253).

Pruitt, R.L. "Developmental Math." in Developmental Approaches to the Teaching of Sciences and Mathematics, Case Studies Report. Atlanta, Ga.: Southern Regional Education Board, Institution for Higher Educational Opportunity, 1976. 72 pp. (ED 151 183). (Not available in hard copy.)

Rotman, J.W. College Algebra and the Math Laboratory. Lansing, Michigan: Lansing Community College Mathematics Lab, 1975. 28 pp. (ED 111 684).

Science Instructor Survey. Los Angeles: Center for the Study of Community Colleges, 1978.

Zwerling, S.L. "Developmental Math with a Difference." Change, January 1977, 9 (1): 28-31.



INSTRUCTOR GOALS, STUDENT EVALUATIONS, AND ACADEMIC DISCIPLINES

Veloris Hallberg

A basic assumption in community college instruction is that a commitment to goals results in strong teaching and a rich educational experience for the student. Prospective community college instructors are taught that lectures, reading and laboratory assignments, student activities--in short, everything that transpires in the classroom--should aim at fulfilling well-defined course objectives that are in line with larger institutional goals and the purposes of community college education in general.

And yet, on the level of personal experience, the student is rare indeed who has not had occasion to question the consistency between objectives and assignments or, even more important, tests and examinations. One of the real frustrations of student life lies in this area of incongruity between professors' expressed goals and their evaluations of student performance. Students learn through experience that they must often look beyond the introductory lecture and the course syllabus to find what is really being

tested. These same students believe that "disparities between what professors say and do are frequent enough for them to continue their search for information" (Becker, et al., 1968, p. 81) about how they will be evaluated even after professors explain their examination and grading policies. Snyder (1971) also observes that early in their collegiate education students learn to look for the differences between "what is actually expected as opposed to what is formally required (p. 9). Their discovery of the "hidden curriculum" can lead to disillusionment, alienation, or gamesmanship.

The research in higher education tends neither to confirm nor deny whether this student attitude is well founded. Although much has been written about institutional goals, little is known about instructors' goals for students in the specific courses taught, and almost nothing is known about the relationship between these goals and the evaluation of student learning.

Also unexplored is the relationship between goals, grading, and academic discipline (defined here as teaching field or subject taught). We do not know whether consistency between goals and grading practices is greater in one field than another, or whether disciplinary affiliation has any relationship to what instructors think is important for their students to learn or what abilities are measured.

With these problems in mind, data gathered by the Center for the Study of Community Colleges was used to answer two questions:

1. Are differences in goals, grading practices, or both, associated with academic discipline?
2. What is the relationship between instructors' goals for their students and the performances they evaluate?

The existent literature is divided on the issue of whether there is a relationship between goals and teaching field. Cohen and Brawer's (1977) research suggests the possibility that discipline is not a sound predictor of either goal priorities or grading practices because disciplinary affiliation has always been weak in the community college. Reporting that 26 percent* of the faculty they surveyed read no scholarly journals and 64 percent read no journals related to professional education or to teaching in their field, they conclude that "the lines of an adisciplinary group

*All percentages are rounded.

emerged, one that had abandoned the academic and not replaced it with anything of substance" (p. 102). And Park (1970) reports in his study of community college instructors' values that although staff members in the same subject matter teaching field will have similar value ranking patterns, they will still seem to react more as individuals rather than as members of a particular discipline.

Some differences along disciplinary lines have been reported by other researchers. Zelan (1971), for example, concludes that sociology faculty differ from others in goal ranking. Wilson (1975) notes that humanities professors tend to favor the goal of self-knowledge and personal identity, while the goal of career preparation was most highly favored by faculty members in the natural sciences and the professional applied fields.

RESULTS AND DISCUSSION

Goals

This investigation confirms that instructors' preferences in both goals for their students and bases for assigning grades do fall along disciplinary lines. Humanities instructors were asked to select one quality from the following list that they most wanted their students to learn:

1. Develop citizenship qualities
2. Develop aesthetic appreciation/sensitivity
3. Develop language sensitivity and skill
4. Learn to make better use of leisure time

In order to determine whether differences in responses are related to subjects taught, respondents were divided and compared according to three major groups:

1. Foreign languages
2. Social sciences: anthropology, economics, history, political science, psychology, sociology
3. All remaining humanities: art history and appreciation, literature, music history and appreciation, philosophy, religious studies

Ninety-six percent of the foreign language instructors selected the third goal for their students, 71 percent of the social science instructors selected the first, and 54 percent of the remaining humanities instructors selected the second.

Foreign language teachers also responded differently to a second set of goals:

1. Understand their own and other cultures
2. Develop their own values
3. Gain abilities to study further in the field
4. Gain respect for traditions/heritage

Nearly half of all the respondents chose the first goal, and about one-fourth preferred the second. Foreign language instructors, the exception here, were almost equally divided between the first and third goals.

Differences in goal priorities can also be seen in a final set:

1. Learn to use tools of research in humanities
2. Gain qualities of mind useful in further education
3. Understand self
4. Develop the ability to think critically

While the fourth goal, "Develop the ability to think critically," was favored by respondents from almost every field, a notable exception again is foreign language instructors, who preferred that their students "Gain qualities of mind useful in further education." The goal "Understand self" was selected by fewer than 11 percent of all faculty but social science, 30 percent of whom indicated that this is their first priority for their students. Instructors' goals for their students, then, seem to be associated to some degree with the subjects they teach.

Grading Practices

In an attempt to get a picture of grading practices in the community college, respondents were asked to indicate which activities count more than 25 percent of a student's grade. Here again, the responses differed somewhat along disciplinary lines. Forty percent of the humanities instructors and 26 percent of the social science instructors indicated that one-fourth of a student's grade is based on papers written inside or outside of class. When these percentages are compared with those in disciplines outside the humanities, considerable differences become apparent. Only three percent of the science instructors, four percent of the mathematics instructors, 10 percent of the technology instructors, and 12 percent of the foreign language instructors consider student papers to be important in assigning grades.

Instructors of foreign languages (90%), humanities (73%), and social science (62%) also weigh class discussion more heavily when determining a student's grade. Only 31 percent of the science and mathematics instructors

and 41 percent of the technology instructors include this variable.

More instructors of humanities and social sciences use essay examinations to evaluate their students than instructors from other fields, as illustrated by the following percentages: humanities, 82 percent; social sciences, 78 percent; sciences, 70 percent; mathematics, 51 percent; technologies, 65 percent; and foreign languages, 33 percent. Differences can also be seen in the use of quick-score examinations, with instructors of social science (74%), science (75%), mathematics (61%), technology (48%), and foreign language (52%) counting them more than 52 percent toward a student's grade. Only 42 percent of the humanities instructors use this type of examination to that degree.

As might be expected from the foregoing results, respondents from different disciplines stress different abilities on examinations and quizzes. Humanities and social science instructors indicated that they consider global relationships very important (the understanding of significant works and events or the ability to synthesize course content), while instructors of natural science, mathematics, foreign languages, and technology stress the mastery of a skill or, to a lesser extent, the recall of specific information.

To answer the first question of the study, then, yes, differences in both goals and grading practices are associated with academic discipline. The second, more important question that this study attempted to answer is whether a relationship exists between instructors' goals for their students and the student abilities they evaluate on examinations. There are many assertions that examinations do not actually measure what instructors want their students to learn, but there is not much real evidence.

For example, Hughes (1977), who claims that literature teachers use objective criteria for evaluating students even though these criteria do not match their educational goals, blames large class size for this mismatch between goals and measurement. Another reason advanced for the problem of evaluating student learning in accordance with teacher goals is the fact that the most important outcomes are long-term and difficult to measure, while easily defined and measured outcomes are often trivial (Baird, 1973).

Part of the problem in the humanities is the inability of humanists to define their instructional goals in concrete, exact terms (Maxwell, 1968).

As a result, charges of irrelevance (Lopp, 1973; Millett, 1973; Simmons, 1974); beclouding (Purves, 1967); and worse, abstract and nonsensical (Gordon, 1969) are made.

Goals and Grading

In spite of these problems, it is not unreasonable to expect that this study would reveal some consistency between goals and grading. Instructors' goals for their students (noted earlier) were compared with their responses to questions about how they evaluate their students. Respondents were asked to indicate what percent of a student's grade is determined by the following activities:

1. Papers written outside of class
2. Papers written in class
3. Quick-score/objective tests
4. Essay exams
5. Field reports
6. Oral recitations
7. Workbook completion
8. Regular class attendance
9. Participation in class discussions
10. Individual discussions with instructor

Faculty were also asked the importance they attached to designated abilities in the tests they give:

1. Mastery of a skill
2. Acquaintance with concepts of the discipline
3. Recall of specific information
4. Understanding the significance of certain works or events
5. Ability to synthesize course content
6. Relationship of concepts to student's own values

In order to determine the relationship between faculty goals for their students and the performances they evaluate, Pearson correlation coefficients were computed for every goal and activity that counts toward a student's grade and, again, for every goal and ability measured on examinations. Very few significant correlations (coefficients of at least .3 at the .05 level of significance) were found in any of the disciplines.

The highest correlations were found among the items concerning self knowledge. In general, humanities instructors who selected the goal "Develop

their own values" were also more likely than others to test for students' abilities to relate concepts to their own values. In particular, the highest correlations were found in the social science faculty between the goal "Understand self: and the ability measured on tests, "Relate concepts to student's own values."

The only other goal that was associated to a significant degree with grading practices was "Develop language sensitivity and skill." A correlation coefficient of .43 was found between this goal and the ability measured on examinations, "Mastery of a skill." A high negative correlation (-.45) resulted between this goal and the ability, "Understand the significance of certain works or events." It can be concluded that humanities instructors who want their students to develop language proficiency will be consistent and test for that rather than for larger concepts.

One might expect the correlations to be highest in these two general areas of either self knowledge and personal values or skill mastery, because the wording of the items describing goals and those regarding examinations is most clearly related in these areas. Perhaps a better measure of consistency is to determine whether instructors who have the same goals for their students will test for similar abilities, regardless of teaching field.

The results of this study show that this is not the case. Faculty from the same discipline tend to measure the same abilities, regardless of the goals they individually consider most important for their students. For example, the faculty who selected the goal "Gain qualities of mind useful in further education" emphasize different abilities on exams, as follows:

Foreign languages: Mastery of a skill (95%)

Social sciences: Acquaintance with the concepts of the discipline (84%)

Other humanities: Understand the significance of certain works or events (87%)

The percentages for those who selected other goals follow essentially the same pattern, suggesting that discipline is a better predictor of evaluation measures than goals. Foreign language instructors are most notably alike. They tend to choose the same goal for their students ("Gain qualities of mind useful in further education"), and they test primarily for the same ability ("Mastery of a skill"). The few foreign language instructors who indicated other goal preferences, nevertheless, overwhelmingly test for skill mastery over other abilities.

Social science instructors' goal preferences are "Develop citizenship qualities" and "Develop the ability to think critically," but over three-fourths of them indicated that they test for a student's acquaintance with the concepts of the discipline regardless of their choice of goals. The outstanding exception is the number who preferred the goal "Understand self." For 85 percent of them--twice the percentage of those who selected other goals--the students' abilities to relate concepts to their own values is most important.

More than half of the other humanities instructors preferred the goals "Develop aesthetic appreciation/sensitivity." Regardless of the goals they selected, though, almost all humanities instructors considered the ability "Understand the significance of certain works or events" very important on examinations. An interesting deviation again appears among those humanities faculty who selected the goal "Understand self." Seventy-four percent of them indicated that they test for students' abilities to relate course content to their own values, as opposed to fewer than half of the instructors who selected other goals.

Goals and evaluation measures were not found to be related to personal characteristics of the instructor (defined here as highest degree held, full-time or part-time status, or number of years taught). No correlation coefficients over .17 were found between any of these characteristics and the goals or abilities faculty emphasized.

CONCLUSION

It can be concluded that instructors' grading practices are more closely related to their teaching field than to either their goals or to the three personal characteristics considered here. But while no strong statistical evidence was found to support the notion that goals and grading practices are closely associated, neither was the reverse found to be true. The research did not show that instructors who say they want their students to think critically stress instead the recall of specific information on exams, or those who say they want their students to develop self knowledge ask instead that they demonstrate the mastery of a skill. However, the conclusion most strongly supported by this study is that faculty from the same teaching field have similar goals for their students and evaluate the same kinds of student performance when assigning grades.

An interesting picture of instructional practices emerges. Foreign

language faculty wish their students to develop language sensitivity and skill and gear their instruction toward further study in the field. They emphasize objective tests and oral recitations in class, and they test primarily for mastery of a skill. They are not as concerned with goals regarding research abilities or self identity, nor do they ask their students to demonstrate knowledge in these areas.

Social science faculty want their students to develop citizenship qualities and the ability to think critically. They emphasize both objective and essay tests, and more than half of them require their students to write papers. They are more likely to measure the understanding and synthesis of course concepts on examinations than the recall of specific information or the mastery of a skill.

Other humanities instructors are most concerned with aesthetic appreciation along with critical thinking. More than other faculty, they emphasize student writing, requiring student papers and essay examinations. On tests, almost all of them consider their students' understanding of the significance of certain works or events to be very important.

This study raises some considerations for faculty development. First, the data can be used to compare one faculty department with another and with their counterparts in the nation. Moreover, the very fact that this investigation failed to produce significant correlations between goals and examinations should demonstrate a need for faculty workshops on how to remain faithful to goals when writing test items or how to translate instructional objectives into testable measures.

Concerned faculty members or administrators, particularly deans of instruction or department chairpersons, may wish to conduct campus surveys of interested personnel to test for consistency between varying goals and grading practices in the different disciplines, and to help instructors evaluate their own awareness in this area. Faculty members need to continually remind ourselves of certain questions generated by this study: Am I asking students to grasp concepts, but testing for trivia? Are my goals and my grading practices similar to or different from those of other instructors in my discipline? What does an "A" in my course mean in terms of student abilities? Are my course goals reflected in my final examination?

Hopefully, this kind of faculty self-awareness will lead to improved instruction.

REFERENCES

Baird, L. "Common and Uncommon Models for Evaluating Teaching." In C.R. Pace (Ed.) New Directions for Higher Education: Evaluating Learning and Teaching, 1973, 1 (4): 77-97.

Becker, H.S., Geer, B., and Hughes, E. Making the Grade. New York: John Wiley and Sons, 1968.

Cohen, A. Objectives for College Courses. Beverly Hills, California: Glencoe Press, 1970.

Cohen, A.M., and Brawer, F.B. The Two-Year College Instructor Today. New York: Praeger Publishers, 1977.

Cox, R. "Examinations and Higher Education: A Survey of the Literature." Universities Quarterly, June 1967, 21 (3): 292-340.

Gordon, E.J. "On Teaching the Humanities." English Journal, May 1969, 58 (5): 681-687.

Heywood, J. Assessment in Higher Education. London: John Wiley and Sons, 1977.

Hughes, C. "Behavioral Objectives of Survey Literature Courses." Improving College and University Teaching, Summer 1977, 25 (3): 139-140.

Lopp, J.E. A Curriculum Analysis of Problems in the Music Curricula of Selected Junior Colleges in Georgia. Doctoral dissertation, University of Georgia, 1973.

Maxwell, W.D. "A Methodological Hypothesis for the Plight of the Humanities." AAUP Bulletin, March 1968, 54 (1): 78-84.

Millett, J. Explorations in Undergraduate Education: Why Political Science? New York: Carnegie Foundation for the Advancement of Teaching, 1973.

Park, Y. The Junior College Staff: Values and Institutional Perceptions. Doctoral dissertation, University of California at Los Angeles, 1970.

Purves, A.C. What is Achievement in Literature Princeton, N.J.: Educational Testing Service, 1967. 11 pp. (ED 013 064).

Simmons, V.A. "The Role of Philosophy at a Community College." Proceedings of the Philosophy Colloquia, Winter/Spring, 1974. Council for Philosophic Studies. Unpublished paper, [1974].

Snyder, B.R. (M.D.). The Hidden Curriculum. New York: Alfred Knopf, 1971.

Wilson, R.C. et at. College Professors and Their Impact on Students. New York: Wiley, 1975.

Zelan, J. "Undergraduates in Sociology." Teachers and Students. Trow, M. (Ed.). New York: McGraw-Hill Pub., 1975.

A SURVEY OF INSTRUCTIONAL PRACTICES

Yukie Tokuyama

How does instruction in the humanities compare with instruction in the social sciences? If differences exist, are they simply random, a reflection of personal teaching styles, or are they indigenous to the discipline? Since both the humanities and the social sciences are concerned with human development, it would seem that instructional variations might well be simply a matter of individual styles. On the other hand, differences could be related to basic variations in each of the academic divisions, rather than to personal teaching methodologies and philosophies.

A major focus of the humanities is on the attitude toward life which centers on concerns for individuals--their emotional development; moral, religious, and aesthetic ideas; and their goals. The purpose of the humanities is to study and promote personal expression of spiritual aesthetic values through literature and art (Hunt, 1966). It involves the search for a meaning of life through religion and philosophy, and it addresses

questions revolving around the meaning of happiness, ethical concerns, and ideals of life. Historically the humanities have sought to understand the source of human greatness--that which sets the human species apart from the rest of the living world. This uniqueness of the individual and the human mind, its ability for responsible inquiry and creativity, is a prime concern.

When individuals form groups, societies and cultures, their formal study no longer belongs to the humanities exclusively but becomes instead the domain of social scientists. For example, historians systematically attempt to study the dynamic character of human activities in order that each succeeding generation can better understand the influences of previous occurrences on present civilizations. Economists examine the ways that social organizations evaluate and satisfy a culture's needs for scarce goods and services--a pressing, and seemingly everlasting, problem. Political scientists investigate the different relationships and arrangements devised by people to maintain peace and order for the common good. Anthropologists and sociologists both study social organizations and behavior. Although the breadth of the social sciences is enormous and complex, the emphasis remains the group and its unity and continuity as well as improved social conditions (Hunt, 1966).

The two areas, therefore, can be expected to teach with different emphases--the humanities stressing the development and enrichment of the individual, and the social sciences emphasizing group processes. It would be logical, then, to expect that noticeable variations in instruction would reflect these inherent differences between the two areas.

THE LITERATURE

A review of the literature on community college instruction reveals that little research has been conducted to date on the comparative goals and approaches in the teaching of the two groups. While both the humanities and the social sciences are widely studied, they are evaluated separately and isolated from each other.

Still, some common strands of thought exist. Although many educators are convinced that "the evolution of instructional procedures... parallels changes in the purposes of higher education, in the curricula, and in the nature of the student body..." (Schalock, 1976, p. 25) most are concerned with teaching techniques. They are concerned that student

enrollments in both the humanities and social sciences are declining at faster-than-expected rates. While an overall reduction of young people is one reason, another reason is the shift away from the liberal arts to technical and health programs in the community colleges. Hence, the literature in both the humanities and social sciences reveals a sense of urgency for the development of active, creative, and practical courses (Koltai, 1975; Spencer, 1977).

It is also argued that curriculum and instruction in the humanities and the social sciences are geared almost exclusively to the transfer student (Cross, 1976; Friedlander, 1977), even though the majority of students do not transfer. At all levels of post-secondary education most instructors spend two-thirds of their class time lecturing (Elliot, and Lloyd, et.al., 1977). Lenning and Micek (1976) explain why the community college, with its tremendously diverse student clientele, requires alternative guidelines and strategies. In a recent conference it was clearly shown that one effective method of addressing the needs and interests of these diverse students is to develop interdisciplinary courses (Thiroux, 1975). The subject matter is broad, not narrowly focused. Another common recommendation for effective learning is the programmed-learning instructional approach. Cross (1976) discusses in depth the merits of the personalized student instruction used in mastery learning and the value of developing behavioral objectives that are measurable (See also Jones, 1975 and Ludwig, 1975). Other popular methods include student inquiry, which is primarily developed through class discussion, and independent study, (Heitzmann, 1974; Koltai, 1975; and Thiroux, 1975) and the use of technological inventions, such as educational television (Schalock, 1975).

THE STUDY

This paper examines several items from the Center for the Study of Community Colleges' national studies of instructional procedures. In an attempt to understand variations that may exist in teaching techniques and objectives, it compares the responses of 229 instructors in the humanities with those of 390 social science faculty members. It is postulated that each discipline's perspective and content will relate to its teaching environments and practices. It is also postulated that in spite of all the literature on the need for new, creative, active approaches to

instruction, the traditional modes dominate in each of these broad areas.

Since the humanities emphasize individual growth and potential, these instructors are inclined to pursue teaching practices that not only illustrate their respect for the human mind but also demand admiration for its creative expressions. In order to transmit this perspective and to help expand the students' awareness of themselves as individuals, many instructors develop courses that compel their students to become involved in independent research, reading, and writing. Inquiry and logic, as well as creativity, are primary concerns. In an attempt to help students recognize and appreciate the diverse modes of human expression as well as an appreciation of others, humanities instructors are far more likely to recommend or even require attendance at plays, films, concerts, and art exhibitions than instructors in other academic fields.

Similarly, the perspective and course content of the social sciences may significantly influence teaching objectives and practices, and social science instructors may be inclined to develop instructional techniques that demonstrate the process and importance of social exchange and civic responsibilities. They will not place the same emphasis on individual projects, nor will they require as much of their students in the way of personal experience and self-examination. Instruction is probably more impersonal. For example, it is expected that over-all class sizes are larger and that quick forms of testing prevail. By virtue of the heavy emphasis on the lecture format of instruction, students are taught as a group to listen to, respect, and accept order and authority. It is the rare instructor who will utilize other means to teach cultural values. Instruction in the social sciences at the two-year college, while attempting to impart a background for understanding societies, does not necessarily promote opportunities for individual creative thought, expression, nor discussion. In fact, students are undoubtedly required to remember more specific details, concepts, and events in order to pass their social science courses than their humanities courses.

Methodology

For purposes of this study, survey responses were examined from 619 instructors in 175 two-year colleges across the country. The 229 responses comprising the humanities category came from instructors of literature, art, religion, and philosophy. The remaining 390 responses are from social

science instructors who taught history, economics, political science, anthropology, and sociology. Two criteria were used to organize the data. The first was to compare the differences between the humanities and social sciences arising from the inherent relationship of each of its own course content. Teaching environment, goals, and practices were expected to directly relate to these basic differences. The second criterion was to ascertain the teaching modes pursued by instructors in the two disciplines in order to compare traditional and innovative approaches.

FINDINGS

As predicted, the goals and objectives of the two disciplines appear to be significantly related to course content. When asked to indicate the quality they most desired their students to achieve, 65 percent* of all the humanities instructors responded that they wanted students to "develop aesthetic appreciation and sensitivity." In a second list of qualities, 51 percent chose the development of individual values and the abilities needed to study further in the field. Responses of the social science teachers also illustrate the nexus of course content with course objectives. From the first list, 62 percent wanted their students "to develop citizenship qualities" and, from the second list, 51 percent selected "to understand their own and other cultures."

Humanities instructors maintain smaller classes and devote more class time to discussion than their social science counterparts. The number of students and the disparities in instructional approaches between the two disciplines are presented in Tables 1 and 2.

Table 1

Class Size

No. of Students	Humanities	Social Sciences
0 - 29	65.5%	55.1%
30 - 59	31.9%	38.0%
60 - 100	2.2%	5.4%

* All percentages in the text are rounded.

Table 2

Activity

Class Discussion	Humanities	Social Sciences
0 - 29%	52.5%	70.0%
30 - 59%	38.0%	21.8%
60 - 100%	6.4%	1.1%

These tables indicate that 66 percent of all humanities classes include less than 30 students, and 42 percent of the instructors delegate anywhere from 30 to 100 percent of class time to discussion. By comparison, only 55 percent of the social science classes have less than 30 students. The bulk of instructors (70%) allocate less than 30 percent of classroom activity to student exchange.

In addition to class size and discussion time, class assignments present another indicator of the type of involvement and perspective of the two areas. Students of the humanities are more frequently required to engage in individual and creative projects than those in the social sciences. In fact, their grades are more heavily weighted toward independent inquiry, research, and writing. Students of the social sciences, on the other hand, are supplied with information concerning realities, forces, and ideas that society must confront. They are expected to understand, or at least recall, specific events and information. This is evident in the type of class activities pursued--for example, quick-score tests that require minimal subjective thought. Table 3 illustrates the different emphases assigned to student activities among the instructors surveyed.

Table 3

Student Activities Comprising
25% or More of the Course Grade

Activities	Humanities	Social Sciences
Papers written outside of class	49.3%	28.2%
Papers written in class	24.3%	12.3%
Quick-Score/Objective tests	30.7%	58.0%

The attitude of the humanities instructors, with its concern for individual creativity and personal development, demonstrates a concern for the individual student. Over half of these instructors indicated that it is very important for students to relate concepts to their own priorities. In contrast, the recall of specific events and information, which can assist in promoting a sense of continuity and breadth of understanding of the progress of societies, was emphasized by social science instructors. Their responses were 11 percent higher in this category than those of the humanities faculty.

Social science instructors, with their broad and overlapping subject areas, are also more inclined to engage guest lecturers for their classes. While 73 percent utilize experts from other disciplines, only 56 percent of the humanities instructors do likewise. Again it appears that the course content influences the instructional approach. Perhaps because they seek to present as much information as possible about their complex and enormous field, 72 percent of the social science instructors indicated that over half of their teaching takes the form of lecture. In contrast, humanities instructors seek to emphasize inquiry, logic, and aesthetic experience. Since they are less fact oriented, they are less inclined to use lectures. In fact, only 41 percent of these faculty members spend half of their class time lecturing.

In evaluating course requirements beyond the classroom, the humanities instructors consistently required and/or recommended more attendance at aesthetic events. The data indicate the following assignments: 70 percent for off-campus films, 54 percent for concerts, and 71 percent for the theater. Social science instructors did not require nor recommend as much in this area (59% for films, 30% for concerts, and 35% for the theater). They did, however, emphasize volunteer community service as part of the class experience. A total of 39 percent of the social scientists required and recommended such out-of-class responsibility, as compared with 18 percent of the humanities instructors. Here again the distinction between the focuses of the disciplines is demonstrated.

In spite of these apparent differences, the similarities of instruction in the two fields are considerable. The lecture, with its teacher-directed class, prevails. More than 70 percent of the instructors in the social science field use lectures for over half of their class time. In the

humanities nearly 59 percent of the teachers lecture for over 30 percent of the classroom activity. And in both disciplines less than half of the instructional time is delegated to discussion. Seventy percent of the social science instructors and 53 percent of the humanities instructors devote less than a third of a class period to the exchange of information, ideas, and opinions. The tone of the classrooms remains rather authoritarian. Students are still largely expected to sit passively and take notes. The processes of group inquiry and independent study are not actively nor consistently encouraged.

As instructional practices are basically traditional, it is no surprise that innovative classroom techniques are generally avoided. For example, whereas team teaching is often recommended as a means of introducing different perspectives to a subject, the national surveys conducted by the Center for the Study of Community Colleges reveal that only 18 percent of the humanities and 35 percent of the social science instructors ever utilize this method.

Similarly, technological innovations have not seriously altered the traditional instructional form. When queried as to whether or not the college had media facilities, 280 social science and 151 humanities instructors responded in the affirmative. However, when further questioned as to their utilization of the facilities, only 170 of the social science and 92 of the humanities instructors responded positively. Based on this and other findings of the two studies, it is apparent that for all the literature on the development of media, no single technological item is used with any great frequency. The highest percent of usage of any single item is 18 percent. Furthermore, this percent is for old and tried items within this area. It is not the new audiotape, video, nor television that is most utilized, but instead the conventional film.

CONCLUSION

The differences in each discipline's perspective and subject content undoubtedly greatly influence both the classroom environment and instructional practices. The data from this nation-wide survey indicate that humanities faculty have classes with fewer students, delegate more time to discussions among students, assign more importance to individual projects, and either require or recommend attendance at aesthetic events to a greater

degree than do the instructors of the social sciences. This choice of course objectives seems to strongly support the thesis that humanities instructors are not only involved in teaching students about the inventions, ideas, sensitivity, and spirit of the human race but also in demonstrating the process of individual inquiry, logic, and creativity. The development of individual values and abilities is, for many, the main course goal. On the other hand, while the findings seem to neatly support the hypothesis, it should be acknowledged that some of the data may be directly affected by other important factors. For example, declining humanities enrollments as well as the instructors' perceived desires for specialized classes could result in smaller class sizes.

In contrast, the social science faculty, with its apparent concern for the development of citizenship qualities, seems to prefer more impersonal teaching modes. Large classes, less time allocated for student discussions, objective types of examinations, and an overwhelming amount of lecturing by the instructor constitute survey findings. Students are taught basic continuity and breadth of social development through the presentation of a wealth of information about different human groups. They are also taught the process of conformity.

Along with these differences in instructional approach between the humanities and social science faculty, important similarities also prevail. Both utilize the traditional lecture more than any other teaching mode. Approximately 82 percent of the social science instructors and 56 percent of the humanities instructors allocate 40 percent or more of their class time to lecturing. While the use of class discussions is more prevalent among humanities instructors, 83 percent of these instructors designate less than 40 percent of their class to this activity. Social science instructors seldom emphasize discussion techniques to any major extent.

Another example of traditional instructional modes in the two broad areas of study is evident in the use of media. Maps are commonly and frequently utilized as visual aids by all instructors (about half of all the social science teachers and approximately 16 percent of the humanities instructors). On the other hand, among the more modern instructional items, neither audiotapes, transparencies, nor television are popular. With 15 percent for the social science and 18 percent for the humanities instructors, the conventional film remains the most frequently used technological

aid offered as an option.

These findings indicate that although instructional approaches are largely traditional, significant differences in the instruction of the two areas reflect the differing perspectives inherent in each. It appears that the instructors of the humanities and the social sciences seem to be acting out the basic philosophies that they teach.

REFERENCES

Cross, K.P. New Roles for College Teachers. Paper prepared for the Annual Meeting of the American Association of Community and Junior Colleges (Washington, D.C., March 17-19, 1976). 12 pp. (ED 121 403)

Elliot, J., et al. "Inquiry Learning in the Community College." Community College Social Science Journal, 1976, 1 (1): 80-84.

Friedlander, J. The History Curriculum in Community Colleges. Los Angeles: The Center for the Study of Community Colleges, 1977. 16 pp. (ED 144 629).

Heitzmann, W.R. "Oriented History and Social Science Teaching in the Community College." Community College Social Science Quarterly, Summer 1974, 4 (4): 70-71.

Humanities Instructor Survey. Los Angeles: Center for the Study of Community Colleges, 1977.

Hunt, E.F. Social Science, An Introduction to the Study of Society. Third Edition. New York: The MacMillan Company, 1966.

Jones, E.L., et al. Mastery Learning: A Strategy for Academic Success in a Community College. Topical Paper No. 53. Los Angeles: ERIC Clearinghouse for Junior Colleges, 1975. 54 pp. (ED 115 315).

Koltai, L. (Ed.) Merging the Humanities. New Directions for Community Colleges No. 12. San Francisco: Jossey-Bass Inc. Pub., 1975.

Lenning, O.T., and Micek, S.S. Defining and Communicating Institutional Mission/Role/Scope and Priorities: The Needs of Different Types of Postsecondary Institutions. Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, April 19-23, 1976). 17 pp. (ED 121 376).

Ludwig, M. "The PSI Social Science Program at Cuyahoga Community College." Community College Social Science Quarterly, 1975, 5 (4): 25-26. 29.

Mayhew, L.B. Colleges Today and Tomorrow. San Francisco: Jossey-Bass Inc., Pub., 1969.

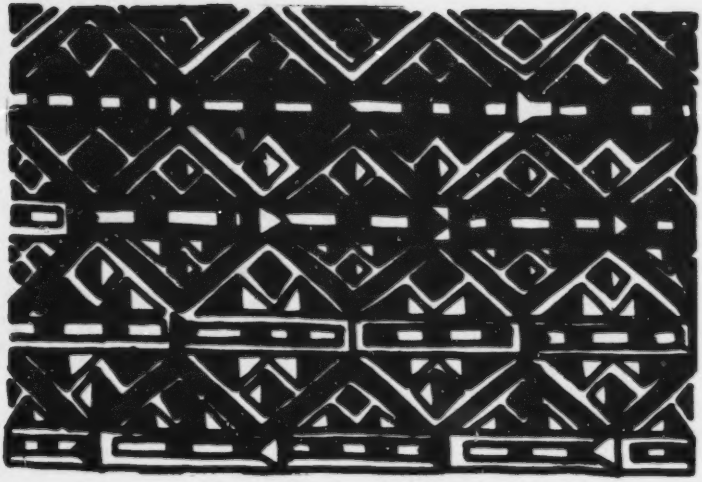
Monroe, C.R. Profile of the Community College: A Handbook. San Francisco: Jossey-Bass Inc., Pub., 1972.

Schalock, H.D. "Structuring Process to Improve Student Outcomes." In O.T. Lenning (Ed.) New Directions for Higher Education, 1975, 4 (4): 25-53.

Science Instructor Survey. Los Angeles: Center for the Study of Community Colleges, 1978.

Spencer, H. "Community Colleges Need to Take a New Course." Community College Social Science Journal, 1977, 1 (2): 12-15.

Thiroux, J.P. (Ed.) The Future of the Humanities in the Community College (Conference Summary). Proceedings of a conference held at Bakersfield College, April 4, 1975. Bakersfield, Calif: Bakersfield College.



THE MEDIA

Rose-Lise Obetz

The community college holds the most potential for wide-spread utilization of instructional media in higher education. This is due to an increasing acknowledgment that diversity of instructional approaches must exist to accommodate the diversity of students served--in terms of their abilities, background, educational goals, motivation, and attitudes toward learning. With instructors who are avowedly student-oriented and more interested in teaching than in research, and administrators who are committed to community outreach, the community college provides an ideal environment for developing instructional innovation using instructional media.

But to what extent <u>are</u> media currently being used in the community college classroom? What factors affect the use of media? How and why do instructors integrate media into classroom instruction?

THE STUDY

In order to answer these questions, 12 hypotheses were posed for

testing, using the science and humanities class section survey data bases collected nationwide in the fall of 1977 by the Center for the Study of Community Colleges. Science class sections and humanities class sections were kept separate.* In order to test the generated hypotheses, crosstabulations were first conducted. Two sets of analyses were performed using two items on the class section surveys that measured instructor use of media in the classroom as dependent variables. These dependent variables were crosstabulated with identified institution-, instructor-, and course-related independent variables. Step-wide multiple regression analysis was then conducted. Only those independent variables that proved statistically significant ($p < .05$) in the crosstabulation analyses were entered into the regression equations.

In addition to the statistical analyses of the class section survey data, supplemental interviews were conducted at a medium-sized, public community college in the greater Los Angeles area to explore the more qualitative aspects of media use.

Table 1

Frequency of Media Use

Science Instructors		(N = 1275)
Frequent Media Users	35%	(446)
Occasional Media Users	41%	(518)
Non-Users	24%	(311)
Humanities Instructors		**(N = 860)**
Frequent Media Users	43%	(373)
Occasional Media Users	48%	(409)
Non-Users	9%	(78)

*This paper is based on the dissertation, Media Used by Community College Faculty in the Classroom, by Rose-Lise Obetz, University of California, Los Angeles, 1980.

RESULTS

The results of the analyses reveal that on a national basis, between 35 and 43 percent* of community college instructors are making significant use of media in the classroom. A full 35 percent of the science faculty responded that they use media frequently in class and 22 percent used it 10 percent or more of the time. A full 43 percent of the humanities faculty responded that they use media frequently, while 44 percent actually use it 10 percent of more of the time. (See Tables 1 and 2.)

Table 2

Percent of Classtime Devoted to Viewing and/or Listening to Media

Science Instructors		(N = 1275)
None (or no response)	54%	(684)
Less than 10%	25%	(316)
10% or more	22%	(275)
Humanities Instructors		**(N = 860)**
None (or no response)	32%	(275)
Less than 10%	24%	(204)
10% - 19%	27%	(234)
20% or more	17%	(147)

Media Use and Institutional Factors

Various researchers have discussed the importance of the institutional environment and administrative commitment to the widespread use of instructional media (Fleischer, 1979; Purdy, 1975; and others). It comes as no surprise, then, that 76 percent of the humanities instructors and 75 percent of the science instructors who frequently use media have access to media production facilities and assistance. It was surprising, however, to discover that media users were significantly more likely to feel that their courses could have been better with the availability of more media than

*All percentages are rounded to the nearest whole number.

their non-user counterparts. Media users were also significantly more likely than non-user counterparts to feel that their courses could have been better with release time to develop course materials than their non-user counterparts.

The supplemental interviews confirmed Cohen's (1970) research on the importance of identifying instructional objectives in order to help clarify and convince instructors of those situations in which media use is the appropriate strategy. In-service teacher education on developing instructional objectives emerged as a more critical need than in-service education in the use of audiovisual equipment advocated by other researchers (Barry, 1977; Fleischer, 1979; and others). While it would be desirable for instructors to know how to operate equipment, many instructors were reluctant to run the equipment for a variety of reasons--it detracted from their role as instructor/evaluator, it was time-consuming to obtain, unrealistic to operate, inefficient use of their time, etc.

Only strong, persuasive arguments for the instructional value of using media can overcome these teacher objections. It became apparent that instructors who wanted to use media would experiment with it on their own, if need be, and learn by trial and error. It is the instructor who doesn't want to use media who must be convinced when its use is appropriate, and defining objectives is a major step in this direction. Strong departmental leadership advocating instructional innovation would also facilitate the use of media, but the ideal is an institutional environment which provides teachers with audiovisual personnel to run equipment and in-service education on developing instructional objectives in order to identify the appropriate instructional strategies.

The supplemental interviews also revealed that the future growth of the campus learning resource center seems assured, and this, in turn, will foster more media use in the classroom. Learning resource centers are playing an increasingly important part in upgrading the skills of nontraditional students, as well as meeting a whole host of other student needs--from developing student study habits to providing individualized instruction. In this role, learning resource centers are at the forefront of developing instructional innovation, and their use of media is well documented. As learning resource centers continue to form closer alliances with classroom teachers, they will play an important part in proselytizing the effective use of media in the classroom.

Finally, the supplemental interviews revealed the importance of administrative commitment to media use. Since many administrators still view media as a "luxury" item and not as an essential instructional support service, campus media centers are in a much more tenuous position. At the first sign of financial difficulties, media centers may find their budgets cut significantly. Therefore, it will be increasingly important for media centers to document and measure their impact on the instructional process.

Institutions must remember that if they make just the initial investment in equipment, they are selling their students, their faculty, and themselves short. To be truly effective, an institution must not only invest in hardware, but also in quality software, trained technicians, adequate support services, and even class schedules and class environments conducive to using media. Only when this type of commitment to media is obtained will the true educational value and potential of media in the classroom be fully realized.

Media Use and Instructor-Related Factors

Results of the statistical analyses revealed that instructors teaching large lecture classes of 75 or more students were significantly more likely to use media than instructors who taught smaller classes. Also, instructors who use media in class are more likely to require or recommend such out-of-class media activities as educational films and television. The supplemental interviews indicated that media users were also more likely to recommend use of the learning resource center to their students. An instructor's years of teaching experience and the degree held were not significantly related to the use of media.

Instructors are more likely to use media in class to explain complex relationships, to illustrate the multifaceted nature of problems, or to communicate highly visual subjects. The supplemental interviews revealed that instructors used media in three fundamental ways: to review course materials, to supplement and enhance course materials, and to form an integral part of the presentation of course content. These interviews with instructors also confirmed Purdy's (1975) findings that an instructor's personal attitudes and values are important determinants of whether or not media will be used. Media users exhibited a tendency to be more student-centered, and expressed more egalitarian educational values. They also extolled its ability to reach students at all levels of skill development, and saw its use as very

"democratic." Media users shared in the community colleges' commitment to open admissions, while non-users were much more instructor-centered and believed in selective student enrollment in order to obtain and ensure academic excellence.

Media Use and Course-Related Factors

While data were available only for the sciences, the statistical analyses revealed that the student audience for which a course is designed is significantly related to media use. Of the science instructors who taught courses for occupational students in allied health fields, 46 percent frequently used media. This figure was matched by the 46 percent who taught courses designed for transfer students in the natural resource fields and who also reported frequent use of media. Instructors who taught courses designed for transfer students in a non-science area and as general education for non-transfer and non-occupational students were also significantly more likely to use media frequently in the classroom.

Academic discipline, however, emerged as the strongest predictor of whether or not media will be used in the classroom. The regression analyses for the humanities, music, art, and interdisciplinary humanities explained 29 percent of the variance in the percent of class time and 12 percent of the variance in the frequency of media use. For the sciences, psychology and sociology explained eight percent of the variance in the percent of class time, and math and computer science explained 18 percent of the variance with a negative correlation in the frequency of use.

Humanities class sections in art, art history, music, liberal arts, and foreign languages were most likely to frequently use media. Specifically, these classes employed audiotapes and records most frequently, followed by slides and films. Surprisingly, music classes (and not foreign language classes) accounted for the preponderance of audio use in the classroom. Humanities classes in history, literature, philosophy, and religious studies were the least likely to use media frequently.

Science class sections in physical sciences, earth and space sciences, biology, agriculture, and natural resources were most likely to frequently use media. Specifically, these classes utilized transparencies most frequently, followed by slides and films. Science class sections in physical anthropology, interdisciplinary social sciences, psychology, sociology, and economics were equally likely to frequently use media. However, these

classes mostly used films, followed by transparencies. Math and computer science were the science classes least likely to use media in the classroom.

For both science and humanities instructors, films are the most frequently used medium. Seventy percent of the humanities faculty and 49 percent of the science faculty use films in the classroom. Overhead transparencies are the second most frequently used medium by science instructors, with 48 percent using them. But audio is second for humanities instructors, with 61 percent using it. Slides are in third place for both science and humanities instructors. Fifty percent of the humanities faculty and 30 percent of the science faculty use slides. Film loops was the least used medium by humanities instructors, and television was the least used medium by science instructors.

PROS AND CONS

The supplemental interviews revealed that instructors use film to supplement and enhance as well as review course content. Films appeared to be most effectively used when instructors provide students with appropriate introductions and a critical framework for viewing the films. Films also stimulate class discussions because they provide a common starting point for all members of the class.

Instructors seem to like the sharpness and sound of film and its appropriateness for large audiences, but they are reluctant to use films unless the subject matter closely parallels course content. Otherwise, films are considered a waste of precious class time. Instructors also tended to be frustrated with the fact that many films are of poor quality and difficult to order.

Instructors tend to use slides as an integral part of their class presentation in the slide/lecture format. Instructors found that the slide/lecture format helps them organize their thoughts and keep course content current. Slides help students to visualize, and enables an entire class to examine small details and nuances of subject matter.

Only one instructor interviewed made extensive use of overhead transparencies. She used them as supplemental materials, and found them helpful to illustrate processes or complex structures that were too difficult to discuss only in the abstract. And only one reported using audio--as a replacement for video--to tape student speeches. Audio tapes have the

advantage of being inexpensive and easy to use.

While video did not emerge as a frequently used medium in the statistical analyses, it was frequently used by the instructors who were interviewed, indicating to this researcher that access to video systems may still be a problem on a national basis. The supplemental interviews indicated that video was used to supplement and enhance course content, and also as an integral part of presenting course content. It was most effective when preceded by a comprehensive introduction.

Instructors like video because of its versatility. It can be stopped and started at any point. Video was also praised for its immediacy and its effectiveness in recording student performances. But video is most effective for smaller audiences, since video monitors are difficult to view from far away. Videotaped programs tended to be of higher quality than many films due to the fact that so many were professional network or PBS programs taped off the air.

DISCUSSION AND RECOMMENDATIONS

A number of findings derived from this study have practical implications for community college administrators. Administrators may want to look at the possibility of reclassifying campus media center services as essential to the instructional process. Administrators can no longer look at media as a luxury item since substantial budget cuts to media services have a direct impact on classroom instruction. Further research needs to be done on the funding patterns of media centers, and the criteria used to allocate funds to this vital operation on campus. Perhaps a model can be developed whereby media centers can become income generating operations.

It has been pointed out that in-service teacher training should not concentrate on how to run equipment as much as on how to develop instructional objectives for courses. Also, instructors need to be exposed to instructional innovations which have effectively used media to reach non-traditional student populations as well as to examples on how to work cooperatively with learning resource centers.

It was discovered that release time and more media facilities will benefit the already converted media user. In order to convert new users, administrators must start with those disciplines that are most conducive to media use, and work on establishing strong departmental support and leadership to encourage innovative instructional practices.

The study also revealed that the use of media does not only consist of hardware. It requires a comprehensive commitment on the part of the institution that necessitates planning with media use in mind. Everything from the purchase of quality software to the availability of technical assistance to adequate architecture and class scheduling is involved.

Results of this study may interest community college instructors. I have described which disciplines most frequently use what types of media. If instructors teach courses in one of these disciplines, they may now be willing to experiment with media if they have not already done so. Instructors may be willing to re-examine some of their own personally held attitudes toward teaching and the use of media.

It was also suggested that instructors who use media in the classroom are more likely to refer their students to the campus learning resource center. Learning resource center directors should also be aware of the potentially powerful impact they can have on convincing instructors to use media in the classroom. Cohen and Brawer (1977) discovered that community college faculty tend not to be affiliated with national disciplinary organizations. Those who are members do not attend meetings on a regular basis. Community college faculty also tend not to read scholarly and professional journals on a regular basis. Consequently, campus learning resource centers may be one of the only ways, or at least one of the most effective ways, of disseminating information on instructional media innovations to community college classroom teachers.

These results also have implications for production companies and funding agencies involved with designing and developing instructional materials. Instructors interviewed emphasized the importance of high quality, professional materials. Funding agencies need to assure that adequate funds are available to develop high quality materials. Funding agencies and educators need to continue to explore less stringent copyright agreements so that increased use of PBS programming in the classroom can occur.

Finally, the importance of developing content specific programs that will closely parallel course content cannot be overemphasized. Otherwise instructors will not use the materials, because they will feel it is not well spent use of their class time. By zeroing in on the most popular media--films, slides, transparencies--and those disciplines in which they are most likely to be used, production companies and funding agencies should be

better able to assign priority to projects for development. Also, since most class periods are generally an hour long, shorter 30 minute films and video programs are easier to integrate into classroom instruction.

This study revealed that a substantial number of community college instructors are already using media in the classroom. Contrary to popular belief, a "media revolution" has already happened at the community college.

REFERENCES

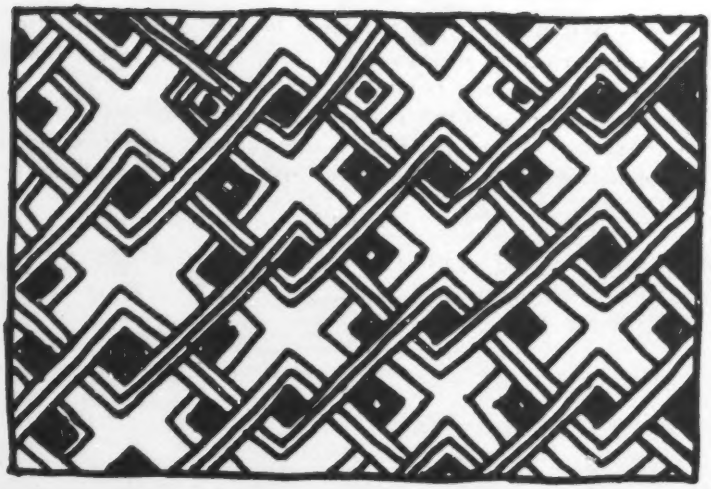
Barry, R.N. Media Use in Nationally Selected High School Programs: A Questionnaire Survey of Secondary School Principals, English Department Chairman and English Teachers. Doctoral dissertation, Columbia University, 1977.

Cohen, A.M. "Technology: Thee or Me? Behavioral Objectives and the College Teacher." Educational Technology, 1970, 10 (11): 57-60.

Cohen, A.M., and Brawer, F.B. The Two-Year College Instructor Today. New York: Praeger Pubs., 1977.

Fleischer, L.N. "Why Hasn't Instructional Technology Had an Impact on American Education?" The International Journal of Instructional Media, 1976/77, 4 (2): 153-61.

Purdy, L. "Community College Instructors and the Use of New Media: Why Some Do and Others Don't." Educational Technology, 1975, 15 (3): 9-12.



DOES THE DOCTORATE MAKE A DIFFERENCE?

Kenneth C. Green

Perhaps no sector of higher education has been less hospitable to doctorate degrees than the two-year colleges. During a period of surplus doctorate production in nearly all fields, comparatively few Ph.D.s have either sought employment in the two-year colleges, or have been successful in their quest for a position in this sector of academe. A recent American Council on Education (ACE) report on new faculty hiring patterns reveals that in the 1976-1977 academic year only 10 percent of the newly hired full-time faculty in the two-year sector had the doctorate (Atelsek and Gomberg, 1978). Additionally this report indicates that only eight percent of the two-year institutions expressed a preference for hiring science faculty with the doctorate, while seven percent indicated a preference for non-science faculty with the doctorate; comparative figures for four-year institutions were 66 percent and 42 percent, respectively. It appears that the two-year institutions do not actively seek faculty who hold doctorate degrees.

This "cool" response from two-year institutions hiring doctorates for faculty positions would appear to present a rather confusing phenomenon, one which, at least on the surface, runs counter to prevailing academic mores. Given the strong association of institutional and program quality with the percentage of doctorates on the faculty, two-year institutions might be well advised to recruit and hire all the "surplus" doctorates they can possibly accommodate, certainly more than the 10 percent of the full-time hires in 1976. Yet this has not been the case. Atelsek and Gomberg (1978) report that there is little expectation that the percentage of new doctoral hires in two-year colleges will increase during the coming years. Looking back several years, Huther (1972) reports the results of his survey on new doctoral hires in public two-year institutions in seven states: new doctorate hires ranged from 3.3 percent to 12.4 percent of all new full-time faculty hiring in 1971, far elow the 1971 National Science Foundation's estimate that 60 percent of all two-year faculty hired then would possess the Ph.D. (Wolfle and Kidd, 1971). Clearly, the odds-makers have been off.

Why the disinterest toward the doctorate in the two-year sector? Several sources provide a number of explanations, all of which contribute to at least a partial understanding of the problem. Huther (1972) reports that doctorate faculty demand (and receive) higher salaries than their non-doctorate colleagues, placing a strain on both budgets and morale. Further, more two-year college presidents perceive the doctorate as an inappropriate degree for teaching in the community/junior college sector. Taylor (1973) states that doctoral training inculcates specialization, departmentalization, a research orientation, and individual identification with the discipline rather than with the local institution, values which are antithetical to the goals and functions of the two-year college and its teaching mission. She also states that doctorates are not likely to be happy or content teaching in the two-year institutions.

Drawing on a 1971 survey of community college faculty which reported that 40 percent of the faculty in two-year institutions would prefer to teach in four-year colleges, Taylor (1973) infers that the bulk of those expressing a preference for the four-year institutions were community college faculty possessing the doctorate.

Connelly (1971) suggests that the anti-doctorate bias of the community and junior colleges is a two-sided affair, as much a situation of the doc-

torate holder rejecting the option of teaching in the two-year institution as it is a matter of the institution rejecting the doctorate holder. He also indicates that American graduate schools generally have not been responsive to requests that doctoral programs include course work and training relevant to the particular demands and teaching requirements of the community and junior colleges (see also Cohen, 1975 and O'Banion, 1974).

Some evidence, however, indicates that the issue is not as one-sided as it appears. Cohen and Brawer's (1977) survey of department chairpersons revealed that most community college department chairs had had positive experiences with doctorate faculty, and that these individuals performed as well or better than their nondoctorate colleagues. The negative responses about doctorate faculty were limited to the five percent* who reported a negative experience with doctorates, the seven percent who reported that doctorates did experience teaching difficulties, and the seven percent who reported that doctorates had difficulty relating to community college students. These negative responses contrast with the 24 percent of the respondents who indicated that PhDs were fine teachers, 22 percent who expressed an equal preference for PhDs and nondocs, and 10 percent who indicated that PhDs were good leaders and colleagues (26 percent expressed no opinion). Additionally, Cohen and Brawer report that better than 60 percent of their respondents indicated that they planned to hire people with doctorates for available teaching positions.

The national survey of humanities faculty suggests that people holding the doctorates are not very different from their nondoctorate colleagues. If people with doctorates are so little different from the rest of the faculty, why would a college employ them? Cohen and Brawer (1977) offer the following answer:"..why not? It looks a little better to the accrediting commissions to have a few doctorates on the staff and brings a little prestige to the college among lay people and students. When placed against the total budget for personnel, the cost differential is slight. Many administrators feel that faculty members with scores of graduate units beyond the master's may well be better teachers (p.76).

Cohen and Brawer present one qualification to their discussion of doctorates in two-year institutions, noting that 21 percent of their nondoctorate respondents were currently working towards completing a doctoral degree

*All percentages are rounded in text.

(either PhD or EdD). This suggests that a large number of two-year college faculty who hold the doctorate are not necessarily "new hires" but instead were employed prior to or while pursuing the doctorate. Thus, these individuals had already been "socialized" to the two-year institution prior to, and during, the course of their graduate studies. A related issue is the percentage of faculty pursuing the doctorate who switch fields (say from chemistry, history, literature, or psychology into education) for their doctoral work. If, in fact, the numbers are large, the traditional discipline-based socialization experience inherent in graduate education may not be as strong for these individuals, particularly if they are part-time graduate students (Katz and Hartnett, 1976).

THE RESEARCH

If such "nay-sayers" as Taylor (1973) and Connolly (1971) are correct that doctorates are different from their nondoctorate colleagues, then differences in value orientations and socialization between the two groups should be consistent, and (statistically) significant. The current study seeks to determine if, in fact, such differences do exist with regard to attitudes toward course goals and objectives or "qualities to achieve" (i.e., output preferences); satisfaction with course materials; and the importance of various abilities for and/or purposes of course examinations. Should there be little difference between doctorates and nondoctorates, then variations in response patterns to questions dealing with the above issues would not be statistically significant.

The Data

This study is based on data collected in the fall of 1977 by the Center for the Study of Community Colleges. Two national surveys of teaching faculty in the two-year colleges, one funded by the National Science Foundation on science faculty (including faculty in the social sciences) and the other funded by the National Endowment for the Humanities (including faculty in such fields as government and political science), provide the data for the analyses described below. The science faculty data are based on the responses of 1,238 men and women, 185 (18%) of whom possess the doctorate. Of the 846 respondents to the humanities survey, 161 (24%) hold the doctorate. Responses of doctorate and nondoctorate faculty were reported by field (specific course taught in fall, 1977), and also were aggregated for all

respondents in each survey by degree level.

Data Analysis

The results reported below are based on at least three response options per question. Chi-square analysis of the distribution of responses by degree level was performed in order to assess the significance, if any, of the response distribution.

RESULTS

The results of the analysis of differences by degree level (doctorates vs. nondoctorates) indicate that among two-year college faculty, possession of the doctorate does not influence attitudes about course goals and objectives, satisfaction with course materials, and perceptions about the purpose of course examinations. The results of the survey data are presented below.

Table 1

The Course Objectives of Science Faculty*

Degree Level	Desired Qualities			
	Understand Science & Technology	Understand Scientific Literature	Apply Principles	Proficiency in Lab Methods & Techniques
Nondoctorates (n = 1036)	279 (26.9%)	16 (1.5%)	649 (62.6%)	92 (8.8%)
Doctorates (n = 179)	57 (31.8%)	3 (1.6%)	112 (62.6%)	7 (3.9%)
	Relate Class to World	Understand Concepts	Understand Scientific Method	Experience Applied Practice
Nondoctorates (n = 1044)	510 (48.9%)	452 (43.3%)	21 (2.0%)	61 (5.8%)
Doctorates (n = 183)	90 (49.2%)	79 (43.2%)	7 (3.8%)	7 (3.8%)
	Master the Tools of Research	Develop Qualities of the Mind	Understand Self	Develop Critical Thought
Nondoctorates (n = 1029)	93 (9.0%)	349 (33.9%)	97 (9.4%)	490 (47.6%)
Doctorates (n = 180)	9 (5.0%)	62 (34.4%)	22 (12.2%)	87 (48.3%)

Course Objectives

Faculty were asked to respond to three questions dealing with course goals, in each instance selecting from among four choices the "qualities you most want students to achieve (as a result of this course)." Chi-square analysis of both the science and humanities faculty responses to these questions did not yield statistically significant results (Tables 1 and 2).

Table 2

The Course Objectives of Humanities Faculty*

Degree Level	Desired Qualities			
	Citizenship	Aesthetic Appreciation	Language Sensitivity	Better Use of Leisure Time
Nondoctorates (n = 665)	191 (28.7%)	247 (37.1%)	218 (32.8%)	9 (1.3%)
Doctorates (n = 152)	62 (40.7%)	39 (25.6%)	47 (30.9%)	4 (2.6%)
	Understand Culture	Develop Own values	Gain Abilities & Skills	Gain Respect for Other Cultures
Nondoctorates (n = 760)	310 (46.2%)	154 (22.9%)	132 (19.7%)	74 (11.0%)
Doctorates (n = 157)	72 (45.9%)	47 (29.9%)	27 (17.2%)	11 (7.0%)
	Tools for Research	Develop Qualities of the Mind	Understand Self	Develop Critical Thinking
Nondoctorates (n = 669)	23 (3.4%)	206 (30.7%)	73 (10.9%)	367 (54.8%)
Doctorates (n = 155)	5 (3.2%)	42 (27.0%)	17 (10.9%)	91 (58.7%)

*Percentages may not total 100 due to rounding of numbers.

Satisfaction with Course Materials

Faculty satisfaction with course materials apparently is not influenced by their degree level (Table 3). As before, the response patterns of both humanities and science faculty, by degree level, does not yield statistically significant results: Doctoral faculty and their nondoctoral colleagues appear to be equally satisfied (or dissatisfied) with current course materials.

Table 3

Faculty Reporting Dissatisfaction with Course Materials by Degree Level

Degree Level	Course Materials					
	Textbook(s)		Lab Materials		Syllabi & Handouts	
Science Faculty	Total n	Percent Dissatisfied	Total n	Percent Dissatisfied	Total n	Percent Dissatisfied
Nondoctorates	975	37.4	416	36.1	607	15.2
Doctorates	170	28.8	96	38.5	112	16.1
	Textbook(s)		Reference Books		Syllabi & Handouts	
Humanities Faculty	Total n	Percent Dissatisfied	Total n	Percent Dissatisfied	Total n	Percent Dissatisfied
Nondoctorates	620	28.0	163	6.7	437	14.8
Doctorates	147	28.0	44	7.5	103	8.7

Purpose of Course Examinations

Doctorate and nondoctorate faculty in both the sciences and the humanities appear to share similar perspectives on the focus, importance, and purposes of course examinations (Table 4). Once again the response patterns of faculty, by degree level, do not reveal statistically significant differences.

Table 4

The Purpose of Course Examinations by Degree Level
(Percent Responding "Very Important")

Degree Level	Purpose of Course Examinations							
	Master a Skill		Concepts of Field		Synthesize Course Content		Recall Information	
	Total n	Percent Very Imp.	Total n	Percent Very Imp.	Total n	Percent Very Imp.	Total n	Percent Very Imp.
Science Faculty								
Nondoctorates	1015	54.5	1030	83.3	1010	48.8	1026	44.4
Doctorates	174	45.4	184	92.4	177	48.6	185	39.5
Humanities Faculty								
Nondoctorates	637	42.7	658	73.8	653	66.7	653	41.8
Doctorates	146	43.8	151	72.8	152	72.4	152	43.3

DISCUSSION

The results suggest that among two-year college faculty, the doctorate degree does not influence faculty values and orientation towards course goals; level of satisfaction with course materials; and priorities for, or perspectives on, course examinations. The results suggest two-year college doctorate and nondoctorate faculty are remarkably alike, despite attributed or perceived differences in discipline orientation, socialization, professionalism, and research orientation, which are allegedly the result of doctoral training (Taylor, 1973; Wolfle and Kidd, 1971). Of the 112 Chi-square tests conducted, only three (2%) yielded significant results ($p \leq .05$).

There are several important caveats that apply to the interpretation of these results. First, according to Cohen and Brawer (1977), a large proportion of community and junior college faculty pursue and earn their doctorates while employed in the two-year institutions; and therefore, they may be more socialized to the mores of the two-year sector than they are to the graduate program and discipline by the time they complete their degrees. Second, individuals who hold the doctorate prior to assuming a teaching position in two-year colleges may be socialized by that experience; the intensity of the more recent socializing in the two-year institution may overcome the "negative" attributes of the graduate education socialization. Finally, if a large number of community college faculty switch fields when they get the doctorate, they will not have been socialized in a traditional "academic" discipline, assuming that the doctorate work was completed in education.

As the result of this investigation of faculty who do and do not possess doctorates, plus earlier studies by Cohen and Brawer (1977), little difference is indicated between doctorate and nondoctorate faculty in the two-year sector. The reticence of some two-year college people towards employing doctorate faculty, therefore, must stem from other sources. Wolfle and Kidd (1971) report that community college faculty see doctorates as a financial burden and also as a potential threat to institutional morale; doctorates are able to command higher salaries, and older, nondoctorate faculty may resent their better paid but less experienced younger colleagues. Perhaps the two-year sector has responded to the elitism of graduate education, particularly as it exists within the prestigious institutions, with their own anti-elitist bias, fighting fire (at one level) with fire (from a dif-

ferent level), saying, in essence, "You, the university, may choose to snub the 'open door' institutions, but we in turn can snub your graduates." Whatever the reasons for the bias against doctorates, a growing body of evidence indicates that the "professionalism, value differences, research orientation" argument traditionally offered is not a viable explanation for many two-year institutions' apparent hiring bias against individuals who possess the doctorate.

A needed next-step is research on differences between doctorates trained in the disciplines and doctorates who have switched fields. Additionally, some work should be done on the nature of professional socialization in the two-year institutions: what it is, how it works, and what the norms and mores are. But even in the absence of that information, it is evident that aside from a degree and some graduate courses, doctorate and nondoctorate faculty in the community and junior colleges have more in common with each other than might be expected.

REFERENCES

Atelsek, F.J., and Gomberg, I.L. New Full-Time Faculty, 1976-1977: Hiring Patterns by Field and Educational Attainment. Higher Education Panel Report Number 38. Washington, D.C.: American Council on Education, 1978. 36 pp. (ED 152 217).

Cohen, A.M. New Degrees for Old Faculty. Paper presented at the Doctor of Arts Conference, New York State Department of Education, November 4, 1975. 17 pp. (ED 119 798).

Cohen, A.M., and Associates. A Constant Variable: New Perspectives on the Community College. San Francisco: Jossey-Bass Inc., Pub., 1971.

Cohen, A.M., and Brawer, F.B. The Two-Year College Instructor Today. New York: Praeger Pub., 1977.

Connolly, J. "Will the Community College Survive the PhD Surplus?" The Educational Record, 1971, 52 (3): 267-272.

Huther, J.W. "Small Market for PhDs: The Public Two-Year College." AAUP Bulletin, 1972, 58 (1): 17-20.

Katz, J., and Hartnett, R.T. (Eds.) Scholars in the Making. Cambridge, Mass.: Ballinger Pub. Corp., 1976.

O'Banion, T. Alternate Forms of Graduate Education for Community College Staff: A Descriptive View. Paper prepared for the Conference on Graduate Education and the Community Colleges, National Board on Graduate Education, Warrington, Virginia, November 11-14, 1974. 28 pp. (ED 100 474).

Taylor, A. Can the Community College Survive the PhD Glut? Unpublished paper, 1973. 11 pp. (ED 088 548).

Wolfle, D., and Kidd, C.V. "The Future Market for PhDs." Science, 1971 173 (3998): 784-93.

DO TEACHING APPROACHES DIFFER?

Callie R. Bowles

Although the ultimate goal of both the sciences and the humanities is to improve and/or enrich the human condition, they have traditionally adopted two different approaches. Science denotes a branch of knowledge that deals with a body of systematically arranged facts and shows the operation of general or natural laws. The scientific method emphasizes an orderly approach to problem solving that individuals use to verify the results of other scientists working independently. Whereas the scientist emphasizes systematized knowledge, the humanist pursues and disseminates the study and understanding of other aspects of being human. The humanities connote the aesthetic and sensitive side of humankind--languages, literature, philosophy, art, and music.

Suggesting the importance of the learning acquired in both of these areas, Columbia University launched a general education movement in 1919 that was to end the reign of the elective system, begun earlier at Harvard

by Charles Eliot. Specialization within one discipline or field has continued to flourish but not to the exclusion of certain intellectual and aesthetic traditions that students must experience to be called "educated." The overall aim of general education stems from the meanings of science and humanities: acquisition of not only a coherent system of knowledge and the ability to apply it, but also development of the ability to think clearly, communicate effectively, and make sensitive and rational value judgments (McKeon, 1937; Reynolds, 1969).

The conceptual differences between the sciences and humanities lead to the basic premise that college instructors in these disciplines approach teaching in different ways. The data from national questionnaires administered in 1977-78 to community college faculty form the basis for an empirical test of this premise.

Under a grant from the National Endowment for the Humanities, the Center for the Study of Community Colleges employed a stratified random sample of 860 humanities instructors from 175 colleges across the United States. Representing most of the same colleges, 1,275 science and social science instructors completed a similar questionnaire, developed and administered with funds from the National Science Foundation. Representative sampling techniques and overall response rates of 85 and 84 percent in the science and humanities studies, respectively, assure high reliability and generalizability of the results. The humanities survey respondents represented cultural anthropology, art appreciation and history, foreign languages (including English as a second language), history, literature, interdisciplinary humanities, music appreciation and history, philosophy, political science, religious studies, and social studies (including cultural geography and ethnic and women's studies). The science survey respondents represented agriculture and natural resources, biology, chemistry, earth and space sciences, economics, engineering, integrated social sciences and anthropology, integrated natural sciences, mathematics, physics, psychology, and sociology.

The basic premise posed earlier leads to the following questions: Do humanities and science instructors desire that their students acquire different or similar abilities? Do their instructional methods differ? Do these instructors evaluate student progress in similar or different ways? Are the levels of education and the years of teaching experience related to

instructors' approaches to their teaching tasks? These are the questions that this chapter specifically addresses.

FINDINGS ABOUT INSTRUCTORS

Both the science and humanities instructors were asked the percentage of class time that they devoted to each of the following activities: their own lectures, student verbal presentations, class discussions, viewing and/or listening to film or taped media, and quizzes and exams.

Lecture

Both groups of instructors lecture extensively, with over 80 percent* spending up to 67 percent of their class time in lecture-demonstration. McKeachie (1969) conjectures that the popularity of the lecture method stems from the traditional conception of the instructor's major function as a transmitter of knowledge. Much, however, has been written on the drawbacks of lecture: little immediate opportunity for students to receive knowledge of their progress in learning, little effectiveness in changing student attitudes, and little long-term retention of information presented (Travers, 1973). Burke (1979) even goes so far as to chide lecturers unequivocally: "Our enthusiasm for maintaining the romantic hum of lecture in ivy-covered halls has been at the expense of any significant benefit to society" (p. 26). In defense of the circumspect use of lecture, however, one must admit that lectures may be used to replace or supplement textbook information with material organized and presented in a sometimes more understandable form than the textbook affords.

Class Discussion

Consistent with the findings of Brawer and Friedlander (1979) regarding the practices of science teachers alone, the second most popular instructional method among scientists and humanists as a whole is class discussion. The survey data indicate that most science (97%) and humanities (93%) instructors spend up to 40 percent of the class time in discussion. Supporting this use of classroom discussion are numerous research studies conveying its effectiveness in achieving certain ends: practice in leadership ability, stimulation of the use of problem-solving abilities, development of such high-level congnitive abilities as synthesis and evaluation, and production of active student thinking (Campbell, 1972). Discussion is a means of arriv-

*All percentages are rounded in text.

ing at understanding through thought and communication, and also, an experience of moving toward and gaining understanding of ideas--both essential ingredients of a liberal education: "Discussion in its liberally educative function has in it, then, a great deal of Mark Hopkins on one end of a log but it is a Mark Hopkins with something in his hand, a Mark Hopkins with something to impart more than his mere self" (Schwab, 1978, pp. 124-125).

Use of Media

The respondents surveyed indicated that humanities instructors use films or taped media more often than science instructors. However, the majority of both groups (humanities, 89% and science, 97%) spend less than 20 percent of their class time using media. Comparatively, almost no science and humanities instructors spend more than 40 percent of class time using audio-visual aids. This pattern of audio-visual material usage suggests that two-year college instructors use such aids in the way approved by educational media specialists, supporting such basic teaching methods as lecture and discussions (Gerlach and Ely, 1971).

Doctoral Degrees

Of the 1,238 science instructors who reported their highest degree held, 18 percent (185) possess the doctorate. Of the 743 humanities respondents to this question, 19 percent (140) possess the doctorate. The type of highest degree held, however, does not seem to be related to the percentage of time that either humanities or science instructors devote to lecture, class discussion, or use of films and taped media. A visual inspection of the percentage of class time devoted to these various teaching techniques reveals little difference (never greater than 4%) in the practices of doctorate and non doctorate science and humanities instructors. This similarity between doctorates and non-doctorates parallels Green's (1979) finding with other data from the NSF and NEH national surveys. Based on the chi-square tests of the data, Green reports elsewhere in this issue that the doctorate does not affect faculty attitudes toward course aims, degree of satisfaction with instructional materials, or ideas about tests and examinations.

STUDENT ABILITIES

An essential component of instruction is teacher evaluation of student progress toward the mastery of course goals. Both the evaluation methods and types of abilities to be assessed involve major decisions that, in turn,

reflect instructional styles. In both Bloom's (1956) taxonomy of educational objectives and Mager's (1962) discussion of the cognitive domain, recall of information is the least sophisticated ability whereas synthesis of ideas is among the highest level activities. However, this view does not deny the importance of acquisition of knowledge, for factual knowledge must often precede synthesis and interpretation of these and related ideas. According to Sanders (1966), some facts are important in and of themselves and others are significant because a cultured person is expected to know them. The more important and useful knowledge a student has, the better are his or her chances of success in other categories that are higher in the taxonomy.

Mastery of a Skill

As one would expect, more scientists (51%) than humanists (40%) perceived the mastery of skill as "very important" in their respective courses. The gap between humanities and science instructors narrows, however, as 28 percent of the scientists and 33 percent of the humanists perceived skill mastery as "somewhat important" (Table 1).

Table 1

Perceived Importance of Abilities Tested by Instructors

Abilities	Humanities Instructors	Science Instructors	Difference in Percentages
Mastery of a Skill			
very important	39.6%	51.0%	11.4%
somewhat important	32.8%	27.5%	5.3%
not important	20.1%	17.3%	2.8%
Acquisition of Concepts			
very important	70.2%	83.1%	12.9%
somewhat important	21.6%	13.3%	8.3%
not important	3.4%	1.3%	2.1%
Recall of Specific Information			
very important	39.9%	42.7%	2.8%
somewhat important	50.9%	49.3%	1.6%
not important	4.9%	5.7%	0.8%
Understanding the Significance of Works, Events, or Phenomena			
very important	63.4%	44.9%	19.4%
somewhat important	21.0%	34.0%	13.0%
not important	9.7%	17.2%	7.5%

Table 1 (continued)

Abilities	Humanities Instructors	Science Instructors	Difference in Percentages
Synthesis of Course Content			
very important	63.2%	46.5%	16.7%
somewhat important	26.7%	38.9%	12.2%
not important	4.6%	10.0%	5.4%

Acquaintance with Concepts

A similar response pattern exists in regard to acquaintance with concepts, both science and humanities instructors perceiving this ability as the most significant one for which they test. This perception of the paramount position of student acquisition of concepts is understandable for concepts form the distinguishing core, the most memorable part, of one's education. Dominowski (1965) has shown that student retention of concepts is greater than retention of isolated facts, and Bruner (1962) contends that concept formation facilitates transfer of ideas. Gagné and Ausubel believe that concept formation lies at the heart of meaningful verbal learning (Lefrançois, 1972).

Recall of Specific Information

Little difference exists between humanists' and scientists' perceptions of the importance of student recall of specific information, for slightly less than half of both groups marked this ability as "very important" (Table 1). Of the five abilities for which instructors test, recall ranks at the bottom (with mastery of a skill).

Understanding the Significance of Works, Events, or Phenomena

The greatest disparity between the avowed practices of science and humanities instructors exists in the "very important" response to understanding the significance of works, events, or phenomena (Table 1). Few humanists (10%) or scientists (17%) marked such understanding as unimportant in the courses that they teach. Even these small percentages, especially in the case of science instructors, are somewhat unexpected, for such understanding, itself the product of keen observation and rational thought, can

lead to critical scientific questions and attendant conclusions (Schwab, 1978).

Synthesis of Course Content

Along with understanding of events, synthesis of course content ranks as the second most significant ability for which both science and humanities instructors test (Table 1). However, 16 percent more humanists than scientists marked such understanding "very important."

Chi-Square

Crosstabulations of the number of years of teaching experience of the humanities instructors with each of the abilities tested revealed two significant correlations at less than the .05 level of significance. Responding instructors were divided into two groups for the crosstabulations: those with less than five years of two-year college teaching experience and those with five or more years of such teaching experience. First, a systematic relationship exists between the number of years of experience of the respondents and their perception of the emphasis that their tests give to assessing student mastery of a skill (Table 2). That is, humanists with more teaching experience feel that skill acquisition is a less significant ability than do their less experienced colleagues.

Table 2

Crosstabulation of Years Taught by Degree of Emphasis Given to Mastery Tests

		Importance		
Years of Experience		Very	Somewhat	Not
1-4	Count	88	50	41
	Row Pct.	49.2%	27.9%	22.9%
	Col. Pct.	29.8%	20.5%	27.0%
	Total Pct.	12.7%	7.2%	5.9%
5-20+	Count	207	194	111
	Row Pct.	40.4%	37.9%	21.7%
	Col. Pct.	70.2%	79.5%	73.0%
	Total Pct.	30.0%	28.1%	16.1%

Table 2 (continued)

	Importance		
	Very	Somewhat	Not
Col. Total	295 42.7%	244 35.3%	152 22.0%

Chi Square = 6.1838 with 2 degrees of freedom
Significance => 0.0454

The second variable that shows a systematic relationship among humanists is "understanding the significance of works or events." Humanists with more years of teaching experience find the ability to understand more significant than do their less experienced colleagues. Perhaps this kind of awareness is a natural outgrowth of accumulated first-hand experience not only in the humanities classroom but also with the imperceptible alteration of a personal philosophy of life that may come with increasing maturity.

EVALUATING STUDENT PROGRESS

Objective and essay tests are the most popular ways of measuring student progress for both science and humanities instructors in two-year colleges. More scientists (60%) than humanists (41%) use objective tests to account for more than 25 percent of the student's grade, while nearly the same percentage of both groups (slightly more than 40%) use essay exams to account for more than 25 percent of the student's grade. However, a substantial difference exists in the use of papers written outside of class, for three times as many humanists as scientists use these marks to account for more than 25 percent of the student's grade.

Three other findings regarding evaluation techniques are distinctive. More humanists (64%) than scientists (42%) use student oral presentations to help determine the student's course grade, and more humanists (66%) than scientists (47%) include class attendance in the course grade. Most startling is that three percent of the science and 10 percent of the humanities instructors use class attendance to determine more than 25 percent of the student's grade! What a student's simply sitting in the classroom has to do with his or her attainment of the learning objectives is unclear, for mere attendance does not mean that a student is learning what the instructor de-

sires. Furthermore, more humanists than scientists weigh class discussion more heavily in determining the student's course grade.

CONCLUSIONS

The innovative techniques touted in the early seventies as existing on the community college level do not appear to be an integral or significant part of the usual repertoire of instructional strategies employed by science and humanities instructors who responded to the 1977-78 national NEH and NSF surveys. The programmed modules and audio-tutorial programs, supposedly the cerebral children of the community college, the "teaching institution," no longer survive to any measureable degree. For the most part, the data reported here confirm a primary Cohen and Brawer (1977) finding about two-year college instructors: their teaching strategies are traditional approaches often associated with the general academic areas that the instructors represent.

Although pronounced similarities exist in the amount of lecture and discussion that science and humanities instructors use, an equally pronounced difference exists in the humanists' heavy and scientists' light use of films and taped media. Part of this disparity may be the result of the divergent natures of the sciences and humanities as disciplines--inclusive of philosophy and learning objectives. However, both science and humanities instructors perceive knowledge of concepts as the paramount ability for which they test. The greatest disparity between the avowed testing measures of science and humanities instructors exists in the use of participation in class discussion, for far more science than humanities teachers do not include class participation at all in determining the student's final grade. Once again, differing course goals, especially affective aims like development of aesthetic appreciation, may make humanities instructors feel that oral expression is a necessary step in the intended learning outcomes.

Finally, although this study does not directly measure student learning, it does deal with factors involved in student achievement. The findings about the popularity of lecture and discussion as teaching strategies support what earlier researchers discovered. For instance, Flanders' (1965) work led to his creation of the "law of two-thirds," which means that two-thirds of the time spent in class is devoted to talk and that two-thirds of this talking time is filled with the teacher's remarks (Silvernail, 1979). Beyond this type of finding, however, there exists little definitive information

about the way that teaching styles affect student learning. Although some correlational studies exist that tend to support such views as "teacher enthusiasm is an ingredient of increased student achievement," few, if indeed any, causal relationships have been established. More national studies, dealing with observation and documentation of in-class student-teacher behavior and its effect upon student learning, are urgently needed. Perhaps, then, we would be able to say that teaching would become a science that we could pass on generation after generation.

REFERENCES

Ausubel, D. Readings in School Learning. New York: Holt, Rinehart and Winston, 1969.

Brawer, F., and Friedlander, J. Science and Social Science in the Two-Year College. Topical Paper No. 69. Los Angeles: Center for the Study of Community Colleges and ERIC Clearinghouse for Junior Colleges, 1979. 37 pp. (ED 172 854).

Bloom, B. et al. A Taxonomy of Educational Objectives: A Handbook I of Cognitive Domain. New York: Longmans, Green and Co., 1956.

Bruner, J. The Process of Education. Cambridge: Harvard U.P., 1960.

Burke, R. "Eroding the Educational Conspiracy." New Directions in Teaching, 1979, 6(4): 24-33.

Campbell, J. In Touch with Students...a philosophy for teachers. Columbia, Missouri: Educational Affairs Pub., 1972.

Cohen, A.M., and Brawer, F. The Two-Year College Instructor Today. New York: Praeger Pub., 1977.

Dominowski, R. "Role of Memory in Concept Learning." Psychological Bulletin, 1965, 63 (4): 271-280.

Flanders, N. Teacher Influence, Pupil Attitudes, and Achievement. Cooperative Research Monograph No. 12. U.S. Dept. HEW Office of Education, Washington D.C.: Gov't. Printing Office, 1965.

Gagne, R. The Conditions of Learning. 2nd ed. New York: Holt, Rinehart, and Winston, 1970.

Gerlach, V., and Ely, D. Teaching and Media: A systematic approach. Englewood-Cliffs, N.J.: Prentice-Hall, 1971.

Green, K.C. Among Two-Year College Faculty, Does/Does Not the Doctorate Make a Difference. Paper presented to Arthur Cohen and Florence Brawer, UCLA, 1980.

Lefrancois, G. Psychology for Teaching; A Bear Always Faces the Front. Belmont, Calif.: Wadsworth 1972.

Mager, R. Preparing Instructional Objectives. Palo Alto, Calif. Fearon Publishers, 1962.

McKeachie, W.J. Teaching Tips. Lexington, Mass.: D.C. Heath, 1969.

McKeon, R. "Education and the Disciplines." Ethics 1937, 47: 377.

Reynolds, J. The Comprehensive Junior College Curriculum. Berkeley, Calif: McCutch Corp., 1969.

Rudolph, F. The American College and University, A History. New York: A. Knopf, 1962.

Sanders, N. Classroom Questions: What Kinds? New York: Harper and Row, 1966.

Schwab, J.T. "A Liberal Education." Science Curriculum and Liberal Education: Selected Essays. Ed. Ian Westbury and Wilkof, N. Chicago: Chicago University Press, 1978.

Silvernail, D. Teaching Styles as Related to Student Achievement ;What Research Says to the Teacher. Washington, D.C.: National Education Association, 1979. 42 pp. (ED 177 156).

Travers, R.M.W. (Ed.) Second Handbook of Research on Teaching; A Project of the American Educational Research Association. Chicago, Ill: Rand McNally College Publishing Company, 1973.

Westbury, I., and Wilkof, N. (Eds.) Science, Curriculum, and Liberal Education: Selected Essays. Joseph J. Schwab. Chicago, Ill: University of Chicago Press, 1978.

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